Extron® Electronics
INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual

MVX 128 A

VGA Matrix Switcher

68-521-31 **Rev. A**
01 06

Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过 。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

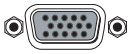
Quick Start — MVX 128 A VGA Matrix Switchers

Installation

Step 1

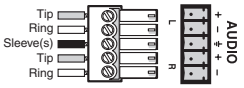
Turn off power to the input and output devices, and remove the power cords from them.

Step 2 — Inputs



a. Connect up to 12 high resolution video inputs to the 15-pin HD input connectors.

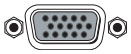
b. Connect up to 12 stereo or mono audio inputs to the 5-pin captive screw connectors.



Balanced Input
(high impedance)

Unbalanced Input
(high impedance)

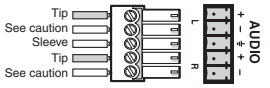
Step 3 — Outputs



a. Connect up to 8 high resolution video devices to the 15-pin HD output connectors.

b. Connect up to 8 balanced or unbalanced stereo audio or mono audio devices to the 5-pin captive screw connectors.

Balanced Output

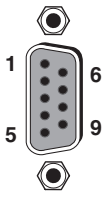


Unbalanced Output

CAUTION *Connect the sleeve to ground. Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

Step 4 — RS-232/RS-422

If desired, connect a control system or computer to the Remote RS-232/RS-422 port.



Pin	RS-232	Function	RS-422	Function
1	—	Not used	—	Not used
2	TX	Transmit	TX–	Transmit (–)
3	RX	Receive	RX–	Receive (–)
4	—	Not used	—	Not used
5	Gnd	Ground	Gnd	Ground
6	—	Not used	—	Not used
7	—	Not used	RX+	Receive (+)
8	—	Not used	TX+	Transmit (+)
9	—	Not used	—	Not used

Step 5 — Power

Plug the switcher into a grounded AC source.

Definitions

Tie — An input-to-output connection.

Set of ties — An input **tied** to 2 or more outputs.

Configuration — One or more **ties** or **sets of ties**.

Current configuration — The currently active **configuration** (also called **configuration 0**).

Global preset — A **configuration** that has been stored. One **global preset** can be assigned to each input button. When a **global preset** is retrieved from memory, it becomes the **current configuration**.

Front Panel Controls

Input and output buttons select inputs and outputs. Input and output LEDs light to indicate video and audio ties.

Input and output buttons also select presets.

Output buttons also toggle video and audio mutes on and off in View-Only mode.

Input LEDs also display the selected output's volume.

Output LEDs also display the selected input's audio level.

Enter button saves changes.

Preset button selects:

Save Preset mode to save a configuration as a preset.

Recall Preset mode to recall a previously-defined preset.

View button selects a view-only mode that prevents inadvertent configuration changes. The View button also decrements the level and volume. See *Viewing and adjusting the audio level* on QS-2.

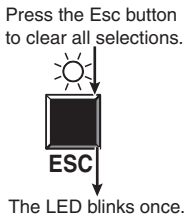
Esc button cancels selections in progress and resets the front panel button indications. The Esc button does **not** reset: the current configuration, the RGBHV and audio selection, any presets, or any audio level or volume settings. The Esc button also increments the level and volume. See *Viewing and adjusting the audio level* on page QS-2.

Quick Start — MVX 128 A VGA Matrix Switchers, continued

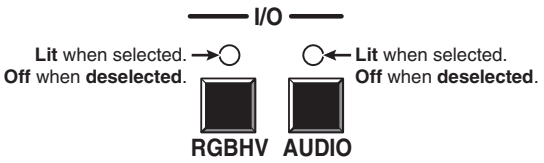
RGBHV and Audio buttons select/deselect video and/or audio. The Audio LED blinks to indicate audio breakaway. The Audio button also selects the audio level/adjust mode. See *Viewing and adjusting the audio level* in the next column.

Create a tie

1. Press and release the Esc button to clear any input LEDs, output LEDs, or control LEDs that may be lit.

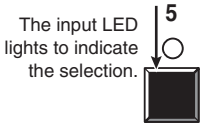


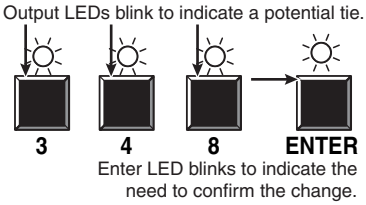
2. Press and release the RGBHV and/or Audio I/O button(s) to select or deselect video and/or audio as desired.



3. Press and release the desired input button.

4. Press and release the desired output button(s).



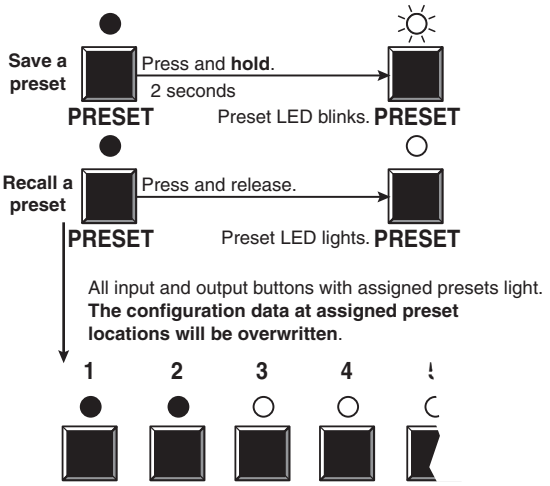


5. Press and release the Enter button. All input and output LEDs and the Enter LED go out.

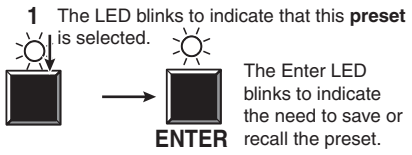
Saving or recalling a preset

1. **Save** a preset — Press and **hold** the Preset button for 2 seconds.

   Recall a preset — Press and release the Preset button.



2. Press and release the desired input or output button.

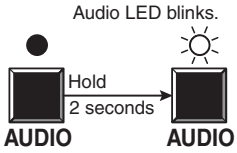

1
The LED blinks to indicate that this preset is selected.
ENTER
The Enter LED blinks to indicate the need to save or recall the preset.

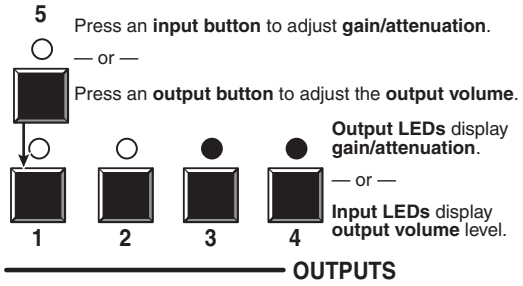
3. Press and release the Enter button.

Viewing and adjusting the audio level

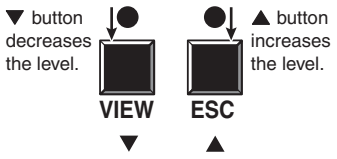
1. Press and **hold** the Audio button.

2. Press an input or output button. See chapter 3 to read the displayed value.





3. Increase and decrease the gain/attenuation or volume level by pressing the Esc (▲) and View (▼) buttons.



4. Press and release the Audio button to exit.

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Chapter One

Introduction

About this Manual

About the Matrix Switchers

Definitions

Features

Introduction

About this Manual

This manual contains installation, configuration, and operating information for the Extron MVX 128 A 12-input by 8-output wideband computer video (VGA) and audio matrix switcher.

About the MVX 128 A Matrix Switcher

The MVX matrix switcher distributes any of 12 inputs to any combination of 8 outputs. The matrix switcher can route multiple input/output configurations simultaneously.

The matrix switcher is a single box solution to complex wideband (figure 1-1) video and/or audio routing applications. Each input and output is individually isolated and buffered, and any input(s) can be switched to any one or all outputs with virtually no crosstalk or signal noise between channels.

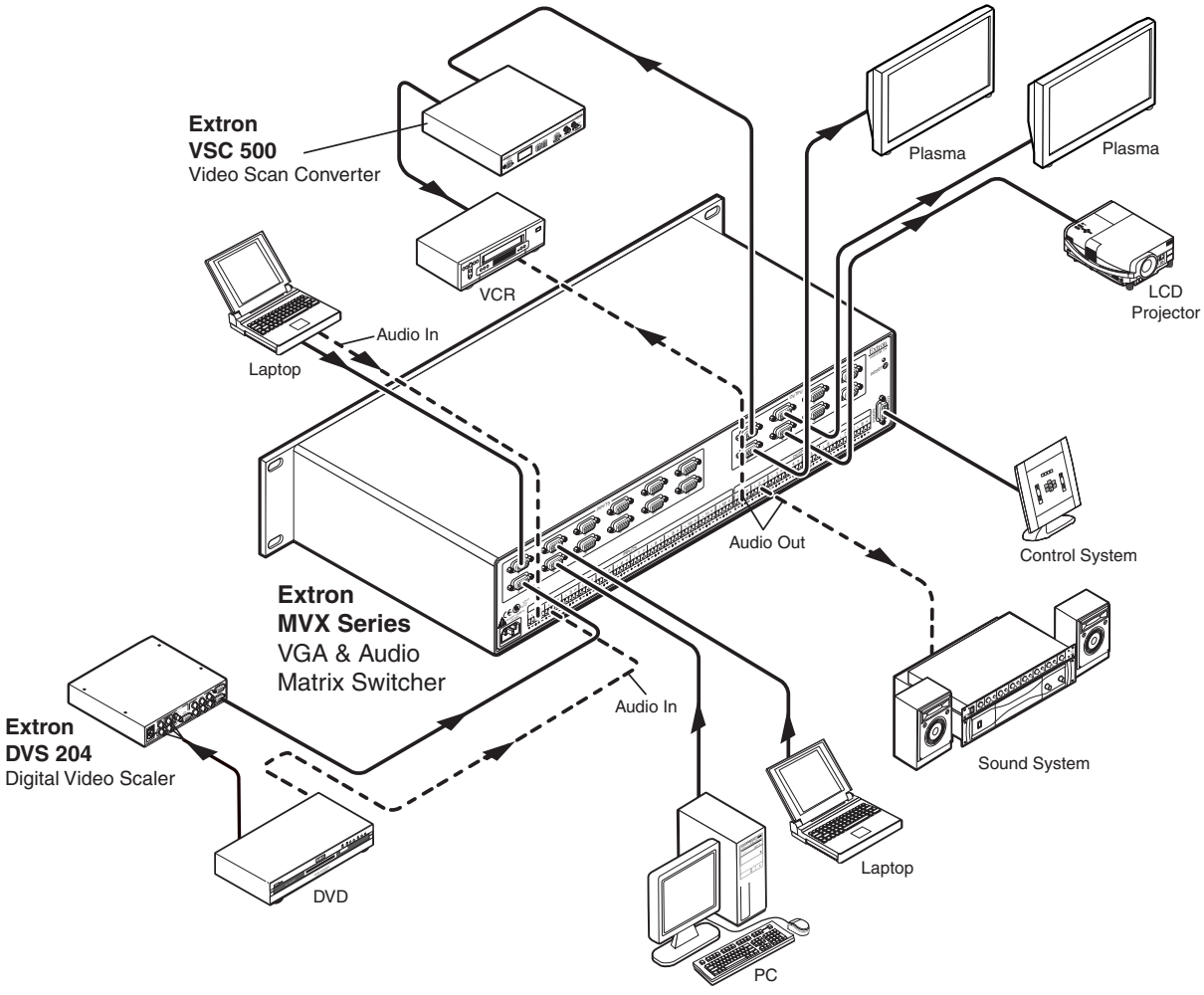


Figure 1-1 — Typical MVX 128 A matrix switcher application

The MVX 128 A inputs and outputs VGA video on 15-pin HD connectors and audio on 3.5 mm, 5-pole captive screw terminals.

The audio switching can be either linked with the video (audio follow) or be independent of the video (audio breakaway). Adjustable input audio gain and attenuation compensates for level differences between audio inputs.

The matrix switcher can be remotely controlled via its RS-232/RS-422 port. The matrix switcher is programmed with Extron's Simple Instruction Set™ (SIS™), a set of basic ASCII code commands that provide simple control through a control system or PC without programming long, obscure strings of code. SIS commands can be entered via the RS-232/RS-422 link.

The RS-232/RS-422 port can be connected to and operated from:

- A control system
- A PC
- An Extron MKP 2000 remote control panel
- An Extron MKP 3000 remote control panel
- An Extron MCP 1000 remote control panel and/or MKP 1000 remote keypad

The matrix switcher is housed in a rack-mountable, 2U high metal enclosure with mounting flanges for standard 19" racks. The appropriate rack mounting kit is included with the switcher.

The switcher has an internal 100 VAC to 240 VAC, 50/60 Hz, 15 watts autoswitchable power supply that provides worldwide power compatibility.

The MVX 128 A has a minimum bandwidth of 300 MHz (-3 dB). The switcher can also switch RGBS, RGsB, RsGsBs, HDTV, component video, S-video, and composite video.

Definitions

The following terms, which apply to all Extron matrix switchers, are used throughout this manual:

Tie — An input-to-output connection.

Set of ties — An input **tied** to two or more outputs. (An output can never be tied to more than one input.)

Configuration — One or more **ties** or one or more **sets of ties**.

Current configuration — The **configuration** that is currently active in the switcher (also called **configuration 0**).

Global memory preset — A **configuration** that has been stored. Up to 32 **global memory presets** can be stored in memory. Preset locations are assigned to the input buttons and (where necessary) output buttons. Up to 20 presets can be selected from the front panel for either saving or retrieving. When a **preset** is retrieved from memory, it becomes the **current configuration**. The switcher has 32 presets; preset numbers larger than 20 are still accessible under RS-232/RS-422 control.

Features

Video — The switcher inputs and outputs RGBHV or RGBS (VGA) video on 15-pin HD connectors. It can also switch RGsB, RsGsBs, component/HDTV, S-video, or composite video.

Bandwidth — The MVX switcher provides a minimum of 300 MHz (-3 dB) video bandwidth, fully loaded.

Audio inputs — The switcher inputs and outputs balanced or unbalanced stereo audio on 3.5 mm, 5-pole captive screw terminals.

Audio input gain/attenuation — Individual input audio levels can be adjusted so there are no noticeable volume differences between sources. Users can set the input level of audio gain or attenuation (-18 dB to +24 dB) via the front panel of the RS-232/RS-422 link.

Audio output volume — The audio volume of each output can be displayed and adjusted through a range of full output to complete silence, from the front panel or under RS-232/RS-422 control.

Switching flexibility — Provides individually buffered, independent matrix switched outputs with audio follow and audio breakaway for audio models.

- **Tie any input to any or all outputs**
- **Quick multiple tie —** Multiple inputs can be switched to multiple outputs simultaneously. This allows all displays (outputs) to change from source to source at the same time.
- **Audio follow —** Audio can be switched with its corresponding video input via front panel control or under RS-232/RS-422 remote control.
- **Audio breakaway —** Audio can be broken away from its corresponding video signal. This feature allows any audio signal to be selected with any video signal simultaneously to one or all outputs in any combination. Audio breakaway switching can be done via front panel control or under RS-232/RS-422 remote control.

Operational flexibility — Operations such as input/output selection, setting of presets, and adjustment of audio levels can be performed on the front panel or via the RS-232/RS-422 link. The RS-232/RS-422 links allow remote control via a PC or control system.

- **Front Panel Controller —** The front panel controller supports input and output selection, preset creation and selection, and audio gain and attenuation and volume control (audio models). The front panel features slots for labels that can identify each input and output with text or graphics.
- **Windows-based control program —** For RS-232/RS-422 remote control from a PC, the Extron Windows-based control software provides a graphical interface and drag-and-drop/point-and-click operation. The Windows-based control program also has an emulation mode that lets you create a switcher configuration file at the home office and then download it for use by the switcher on site.
- **Simple Instruction Set (SIS) —** The remote control protocol uses Extron's SIS for easy programming and operation.
- **Remote control panels and keypads —** The matrix switchers are remote controllable, using the optional MKP 2000 and MKP 3000 remote control keypads. The remote control devices are easy to use and provide tactile buttons for quick selection.

Upgradeable firmware — The firmware that controls all switcher operation can be upgraded in the field via RS-232/RS-422, without taking the switcher out of service. Firmware upgrades are available for download on the Extron Web site, www.extron.com, and can be installed using the Windows-based control program.

Labeling — The Extron label software ships with every Extron matrix switcher. You can create labels to place above the front panel input buttons and below the output buttons, with names, alphanumeric characters, or color bitmaps for easy and intuitive input and output selection. Alternatively, labels can be made with any Brother® P-Touch™ or comparable labeler.

Global memory presets — 32 global memory presets are a time-saving feature that lets you set up and store input/output configurations in advance. 20 global memory presets are available from the front panel. You can then recall those configurations, when needed, with a few simple steps.

Rack mounting — Rack mountable in any conventional 19″ wide rack.

Front panel security lockout (*Executive* mode) — If a matrix switcher is installed in an open area where operation by unauthorized personnel may be a problem, a security lockout feature can be implemented. When the front panel is locked, a special button combination or SIS command is required to unlock the front panel controller before it can be operated.

Power — The matrix switcher's 100 VAC to 240 VAC, autoswitchable, internal power supply provides worldwide power compatibility.

Chapter Two

Installation

Mounting the Switcher

Cabling and Rear Panel Views

Installation

Mounting the Switcher

The MVX 128 A is housed in a rack-mountable, 2U high metal enclosure with mounting flanges for standard 19" racks. If desired, rack mount the switcher as follows:

1. Insert the switcher into the rack, aligning the holes in the mounting bracket with those in the rack.
2. Secure the switcher to the rack using the supplied bolts.

Cabling and Rear Panel Views

All connectors are on the rear panel. Figure 2-1 shows the rear panel of the MVX 128 A.

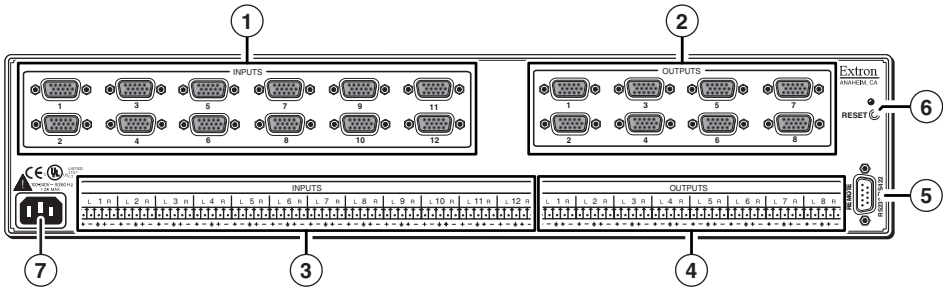


Figure 2-1 — MVX 128 A video and audio matrix switcher

CAUTION *Use Electrostatic discharge (ESD) precautions (be electrically grounded) when making connections. Electrostatic discharge can damage equipment, even if you cannot feel, see, or hear it.*

CAUTION *Remove system power before making all connections.*

Video connections

NOTE *The matrix switcher does not alter the video signal in any way. The signal output by the switcher is in the same format as the input.*

NOTE *The MVX 128 A can also switch RGBS, RGsB, RsGsBs, component video, S-video, or composite video by using the appropriate adapters.*

① **RGB video inputs —** Connect the analog computer-video sources to these 15-pin HD female connectors.

NOTE *Most laptop or notebook computers have an external video port, but they require special commands to output the video to that connector. Also, a laptop's screen shuts off once that port is activated. See the computer's user's guide for details, or contact Extron for a list of common laptop keyboard commands.*

② **RGB video outputs —** Connect RGBHV video displays to these 15-pin HD female connectors for each output.

Audio connections

By default, the audio ties follow the video ties. Audio breakaway, which can be activated via the front panel or under RS-232/RS-422 control, allows you to select from any one of the audio input sources and route it separately from its corresponding video source. See chapter 3, *Operation*, chapter 4, *Programmer's Guide*, and chapter 5, *Matrix Software* for details.

③ **Connections for balanced and unbalanced audio inputs —** Each input has a 3.5 mm, 5-pole captive screw connector for balanced or unbalanced stereo audio input. Connectors are included with each switcher, but you must supply the audio cable. See figure 2-2 to wire a connector for the appropriate input type and impedance level. High impedance is generally over 800 ohms.

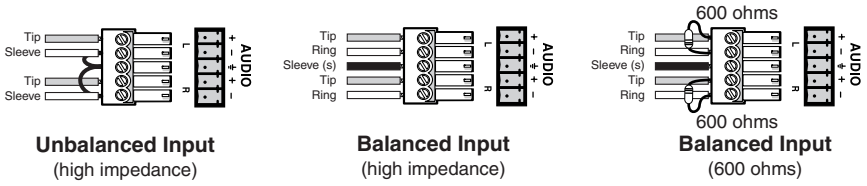


Figure 2-2 — Captive screw connector wiring for audio inputs

CAUTION *The captive screw audio connector can easily be inadvertently plugged partially into one receptacle and partially into an adjacent receptacle. This misconnection could damage the audio output circuits. Ensure that the connector is plugged fully and only into the desired input or output.*

NOTE *See figure 2-3 to identify the tip, ring, and sleeve when you are making connections for the switcher from existing audio cables. A mono audio connector consists of the tip and sleeve. A stereo audio connector consists of the tip, ring and sleeve. The ring, tip, and sleeve wires are also shown on the captive screw audio connector diagrams, figure 2-2 and figure 2-4.*

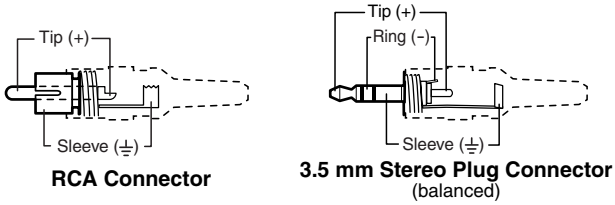


Figure 2-3 — Typical audio connectors

The audio level for each input can be individually set via the front panel or Ethernet or RS-232/RS-422 control to ensure that the level on the output does not vary from input to input. See chapter 3, *Operation*; chapter 4, *Programmer's Guide*; and chapter 5, *Matrix Software* for details.

④ **Connections for balanced and unbalanced audio outputs —** These 3.5 mm, 5-pole captive screw connectors output the selected unamplified, line level audio. Connect audio devices, such as an audio amplifier or powered speakers. See figure 2-4 to properly wire an output connector.

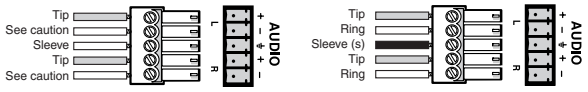


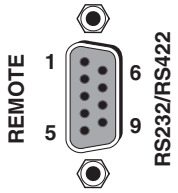
Figure 2-4 — Captive screw connector wiring for audio output

CAUTION *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

The volume level for each output can be individually set via the front panel or RS-232/RS-422 control. See chapter 3, *Operation*; chapter 4, *Programmer's Guide*; and chapter 5, *Matrix Software* for details.

RS-232/RS-422 connection

⑤ **RS-232/RS-422 connector —** Connect a host device, such as a computer, touch panel control, or RS-232 capable PDA to the switcher via this 9-pin D connector for serial RS-232/RS-422 control (figure 2-5).



Pin	RS-232	Function	RS-422	Function
1	—	Not used	—	Not used
2	TX	Transmit data	TX–	Transmit data (–)
3	RX	Receive data	RX–	Receive data (–)
4	—	Not used	—	Not used
5	Gnd	Signal ground	Gnd	Signal ground
6	—	Not used	—	Not used
7	—	Not used	RX+	Receive data (+)
8	—	Not used	TX+	Transmit data (+)
9	—	Not used	—	Not used

Figure 2-5 — RS-232/RS-422 connector

See chapter 4, *Programmer's Guide*, for definitions of the SIS commands (serial commands to control the switcher via this connector) and chapter 5, *Matrix Software*, for details on how to install and use the control software.

NOTE *The switcher can support either the RS-232 or RS-422 serial communication protocol, and operate at 9600, 19200, 38400, or 115200 baud rates.*
See Selecting the RS-232/RS-422 protocol and baud rate *on page 3-33, to configure the RS-232/RS-422 port from the front panel.*

If desired, connect an MKP 2000 or MKP 3000 remote control panel to the switcher's RS-232/RS-422 connector. Refer to the *MKP 2000 Remote Control Panel User's Manual* and the *MKP 3000 User's Manual* for details.

Reset button

⑥ **Reset button —** The Reset button initiates two levels of reset to the matrix switcher. Press and hold the button while the switcher is running or while you power up the switcher for different reset levels.

See Reset button in chapter 3, *Operation*, for details.

- **Rear panel (mode 5) system reset —** Press and hold the Reset button until the Reset LED blinks three times (approximately 9 seconds) then release the button and push it again to clear all ties and presets, and reset all audio gains to 0 dB.
- **Hard reset —** Press and hold the Reset button while powering up the switcher to perform all of the mode 5 reset functions and restore the switcher to the default factory conditions.

Power connection

⑦ **AC power connector —** Plug a standard IEC power cord into this connector to connect the switcher to a 100 VAC to 240 VAC, 50 or 60 Hz power source.

3

Chapter Three

Operation

Front Panel Controls and Indicators

Front Panel Operations

Rear Panel Controls

Optimizing the Audio

Troubleshooting

Configuration Worksheets

Operation

Front Panel Controls and Indicators

The front panel controls (figure 3-1) are grouped into two sets. The input and output buttons are grouped on the left side of the control panel. The control buttons and video/audio (I/O) selection buttons are grouped on the right side of the panel.

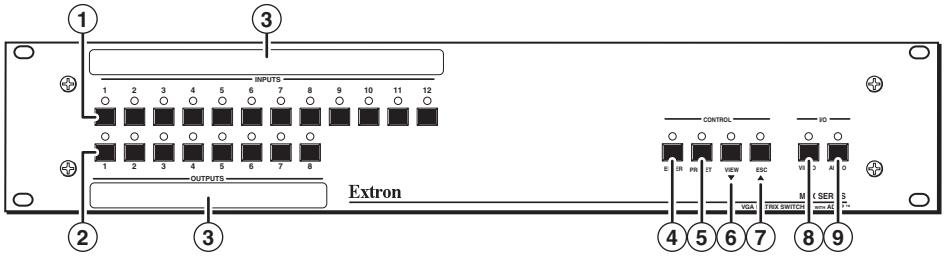


Figure 3-1 — Front panel, MVX 128 A

Definitions

The following terms, which apply to all Extron matrix switchers, are used throughout this manual:

Tie — An input-to-output connection.

Set of ties — An input **tied** to two or more outputs. (An output can never be tied to more than one input.)

Configuration — One or more **ties** or one or more **sets of ties**.

Current configuration — The **configuration** that is currently active in the switcher (also called **configuration 0**).

Global memory preset — A **configuration** that has been stored. Up to 32 **global memory presets** can be stored in memory. Preset locations are assigned to the input buttons and output buttons. Up to 20 presets can be selected from the front panel for either saving or retrieving. When a **preset** is retrieved from memory, it becomes the **current configuration**. The switcher has 32 presets; preset numbers higher than 21, too high to be available from the front panel, are still accessible under RS-232/RS-422 control.

Input and output buttons

① **Input buttons and LEDs** — The input buttons and LEDs have two primary functions (•) and two secondary (❑) functions:

- • Select an input.
- • Identify the selected input.
- ❑ Select a preset. See *Using global presets* on page 3-21.
- ❑ Display the output volume level. See *Viewing and adjusting the output volume* on page 3-28.

② **Output buttons and LEDs** — The output buttons and LEDs have two primary functions (•) and three secondary (❑) functions:

- • Select output(s).
- • Identify the selected output(s).
- ❑ Mute the output. See *Muting and unmuting video and/or audio* on page 3-18.
- ❑ Display the audio level of the selected input. See *Viewing and adjusting the input audio level* on page 3-24.
- ❑ Select a preset. See *Using global presets* on page 3-21.

③ **Input and output label windows** — These translucent panels can be removed and replaced to insert labels behind the panels. To remove a panel, insert the Phillips-head end of a Tweeker or small Phillips-head screwdriver into the hole in one end of the panel, and gently slide the tab at the edge of the panel out of the recess in the switcher housing.

Input and output labels can be created easily with Extron's button label generator software, which ships with every Extron matrix switcher, or with any Brother® P-Touch™ labeler. Each input and output can be labeled with names, alphanumeric characters, or even color bitmaps for easy and intuitive input and output selection (figure 3-2). See chapter 5, *Matrix Software*, for details on using the label software.

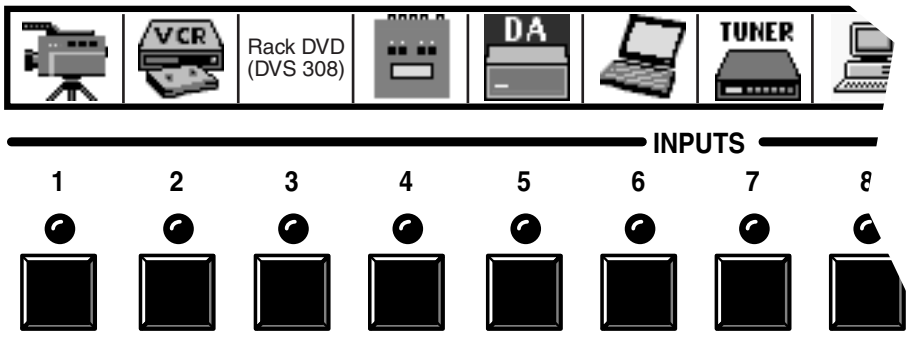


Figure 3-2 — Sample label

Control buttons

④ **Enter button and LED —** The Enter button and LED have three primary functions (•) and three secondary (❑) functions:

- Saves changes that you make on the front panel. To create a simple configuration:
  - ❍ Specify RGBHV, audio, or both (see I/O selection buttons [⑧] and [⑨]).
  - ❍ Press the desired input button (①).
  - ❍ Press the desired output button(s) (②).
  - ❍ Press the Enter button.
- Indicates that a potential tie has been created but not saved.
- Indicates that a global preset has been selected to be saved or recalled but that the preset action has not been accomplished.

❑ With the Preset, View, and Esc buttons, selects *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Selects 9600 baud for the RS-232/RS-422 port in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Indicates that the RS-232/RS-422 port is set to 9600 baud in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

⑤ **Preset button and LED —** The Preset button and LED have two primary functions (•) and three secondary (❑) functions:

- Activates *Save Preset* mode to save a configuration as a preset and *Recall Preset* mode to activate a previously-defined preset.
- Blinks when *Save Preset* mode is active and lights steadily when *Recall Preset* mode is active.

❑ With the Enter, View, and Esc buttons, selects *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Selects 19200 baud for the RS-232/RS-422 port in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Indicates that the RS-232/RS-422 port is set to 19200 baud in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

⑥ **View (▼) button and LED —** The View (▼) button and LED have two primary functions (•) and six secondary (❑) functions:

- Selects a *View-Only* mode that displays the current configuration.

NOTE *View-only mode also provides a way to mute and unmute the outputs. See* Muting and unmuting video and/or audio *on page 3-18.*

- Indicates that *View-Only* mode is active.

❑ Decreases the audio level of the selected input. See *Viewing and adjusting the input audio level* on page 3-24.

❑ Indicates a negative (attenuation) audio level. See *Viewing and adjusting the input audio level* on page 3-24.

❑ Decreases the volume of the selected output. See *Viewing and adjusting the output volume* on page 3-28.

❑ With the Enter, Preset, and Esc buttons, selects *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Selects 38400 baud for the RS-232/RS-422 port in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Indicates that the RS-232/RS-422 port is set to 38400 baud in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

⑦ **Esc (▲) button and LED —** The Esc (▲) button and LED have two primary functions (•) and six secondary (❑) functions:

- Cancels operations or selections in progress and resets the front panel button indicators.

NOTE *The Esc (▲) button does **not** reset the current configuration, the RGBHV button and Audio selection button, any presets, or any audio gain or attenuation settings.*

- Flashes once to indicate that the escape function has been activated.

❑ Increases the audio level of the selected input. See *Viewing and adjusting the input audio level* on page 3-24.

❑ Indicates a positive (gain) audio level. See *Viewing and adjusting the input audio level* on page 3-24.

❑ Increases the volume of the selected output. See *Viewing and adjusting the output volume* on page 3-28.

❑ With the Enter, Preset, and View buttons, selects *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Selects 115200 baud for the RS-232/RS-422 port in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Indicates that the RS-232/RS-422 port is set to 115200 baud in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

I/O controls

You must specify video, audio, or both when you are creating or viewing a configuration. This is done with the RGBHV button (⑧) and Audio (⑨) buttons.

⑧ **RGBHV button and LED —** The RGBHV button and LED have two primary functions (•) and four secondary (❑) functions:

- Selects and deselects video for a configuration that is being created or viewed.
- Lights green to indicate that video is available for configuring or for viewing.

❑ With the Audio button, toggles the front panel lock on or off. See *Locking out the front panel (*Executive *mode)* on page 3-32.

❑ With the Audio button, commands the front panel system reset. See *Performing a system reset from the front panel* on page 3-32.

❑ Selects the RS-232 protocol for the RS-232/RS-422 port in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Indicates that the RS-232/RS-422 port is set to the RS-232 protocol in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

⑨ **Audio button and LED —** The Audio button and LED have two primary functions (•) and five secondary (❑) functions

- Selects and deselects audio for a configuration that is being created or viewed.
- Lights to indicate that audio is available for configuration or viewing.

❑ Selects the *Audio* mode, in which you can adjust the input audio level. See *Viewing and adjusting the input audio level* on page 3-24 .

❑ With the RGBHV button, toggles the front panel lock on or off. See *Locking out the front panel (*Executive *mode)* on page 3-32.

❑ With the RGBHV button, commands the front panel system reset. See *Performing a system reset from the front panel* on page 3-32.

❑ Selects the RS-422 protocol for the RS-232/RS-422 port in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

❑ Indicates that the RS-232/RS-422 port is set to the RS-422 protocol in *Serial Port Configuration* mode. See *Selecting the RS-232/RS-422 protocol and baud rate* on page 3-33.

Front Panel Operations

The following paragraphs detail the power-up process and then provide sample procedures for the following actions:

- Creating ties, sets of ties, and configurations
- Changing a configuration
- Viewing ties, sets of ties, and configurations
- Muting and unmuting outputs
- Saving a preset
- Recalling a preset
- Viewing and adjusting the output volume
- Viewing and adjusting the input audio level
- Locking the front panel
- Performing front panel resets
- Reading and setting the RS-232/RS-422 Remote port settings

Power

Apply power by connecting the power cord to an AC source. When AC power is applied, the switcher performs a self-test that flashes the front panel LEDs and then turns them off. An error-free power up self-test sequence leaves the RGBHV LED and the Audio LED on, and all other LEDs unlit.

The current configuration and all presets are saved in non-volatile memory. When power is applied, the most recent configuration is retrieved. The previous presets remain intact.

If an error occurs during the self-test, the switcher locks up and does not operate. If your switcher locks up on power-up, call the Extron S^3 Sales & Technical Support Hotline.

Creating a configuration

The current configuration can be changed using the front panel buttons. Change the current configuration as follows:

1. Press the Esc button to clear any input LEDs, output LEDs, or control LEDs that are lit.
2. Select to configure video, audio, or both by pressing the RGBHV button and/or Audio button.
3. Select the desired input and output(s) by pressing the input and output buttons.

   To indicate **potential ties**, output LEDs **blink** when an output is selected but not tied to the input.

   To indicate **current ties**, output LEDs **light** steadily when an input is tied to the output.

   To clear unwanted outputs, press and release the output buttons associated with the lit LEDs. To indicate **potential unties**, output LEDs **blink** when an output is deselected but not untied from the input.
4. Press and release the Enter button to accept the new tie or to break an existing tie.
5. Repeat steps **1** through **4** to create additional ties until the desired configuration is complete.

NOTE

- *Only one video input and one audio input can be tied to an output.*
- *If a tie is made between an input and an output, and the selected output was previously tied to another input, the older tie is broken in favor of the newer tie.*
- *To indicate current ties, output LEDs light when an input is selected. To clear unwanted outputs, press and release the associated output buttons.*
- *If, when configuring video and audio ties, the Audio LED blinks and the RGBHV LED is on after selecting an input or output, the LEDs indicate audio breakaway, meaning that the audio ties are not the same as the video ties for that input.*
- *If an input with no tie is selected, only that input's LED lights.*
- *When the RGBHV and Audio LEDs are on, if an input with an audio tie but no video tie is selected, the input's LED lights and the Audio LED blinks.*
- *As each output is selected, the associated output LED blinks to indicate a tentative tie. LEDs for output(s) that were already tied to the input light steadily. Outputs that are already tied can be left on, along with new blinking selections, or toggled off by pressing the associated output button.*

Example 1: Creating a set of video and audio ties

In the following example, input 5 is tied to outputs 3, 4, and 8. The steps show the front panel indications that result from your actions.

NOTE *This example assumes that there are no ties in the current configuration.*

1. Press and release the Esc button (figure 3-3).

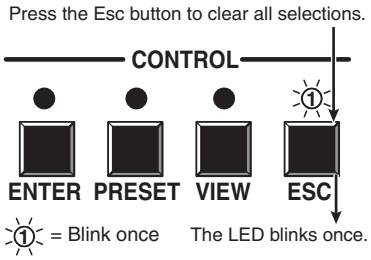


Figure 3-3 — Clear all selections

2. To select video and audio for the tie, if necessary, press and release the RGBHV button and the Audio button until the LEDs light (figure 3-4).

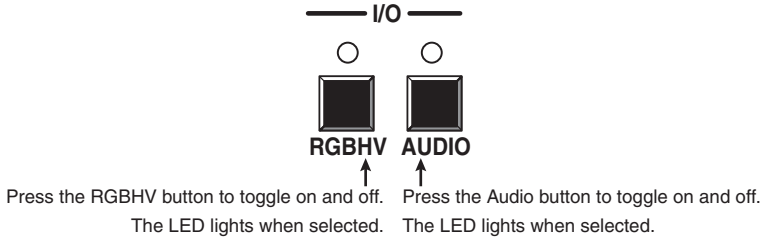

I/O
RGBHV
AUDIO
Press the RGBHV button to toggle on and off.
The LED lights when selected.
Press the Audio button to toggle on and off.
The LED lights when selected.

Figure 3-4 — Select RGBHV and audio

3. Press and release the input 5 button (figure 3-5).

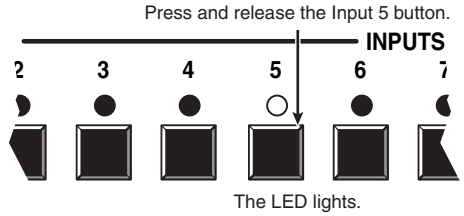


Figure 3-5 — Select an input

4. Press and release the output 3, output 4, and output 8 buttons (figure 3-6).

NOTE *The entire set of ties can be canceled at this point by pressing and releasing the Esc button. The Esc LED flashes once.*

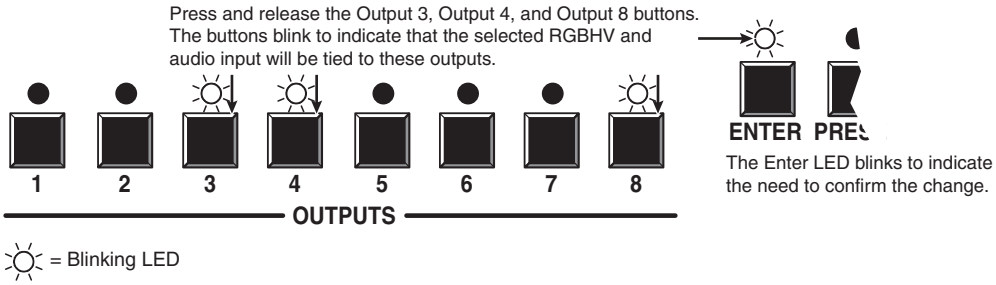


Figure 3-6 — Select the outputs

5. Press and release the Enter button (figure 3-7).

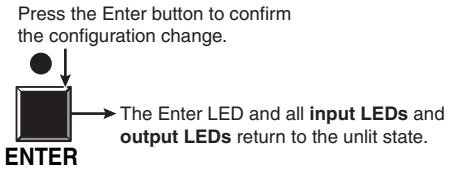

Press the Enter button to confirm the configuration change.
The Enter LED and all **input LEDs** and **output LEDs** return to the unlit state.
ENTER

Figure 3-7 — Press the Enter button

The current configuration (figure 3-8) is now:

- Input 5 (video and audio) are tied to output 3, output 4, and output 8

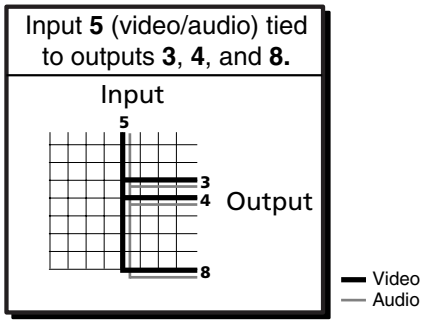


Figure 3-8 — Example 1, final configuration

Example 2: Adding a tie to a set of video and audio ties

In the following example, a new video tie is added to the current configuration. The steps show the front panel indications that result from your action.

NOTE *This example assumes that you have performed example 1.*

1. Press and release the Esc button (figure 3-9).

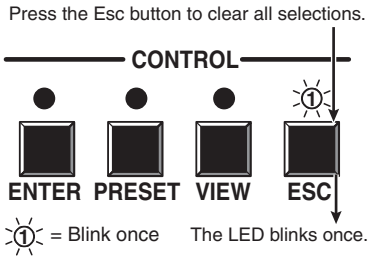


Figure 3-9 — Clear all selections

2. To select video only for the tie, if necessary, press and release the RGBHV button and/or Audio button (figure 3-10).

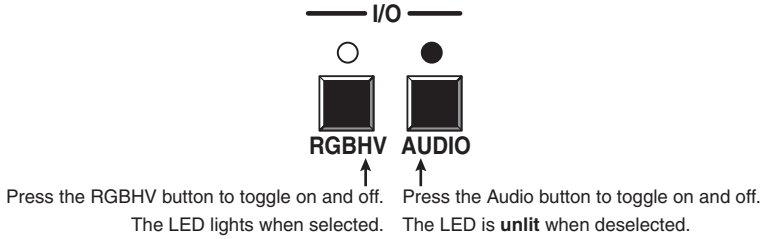

I/O
RGBHV
AUDIO
Press the RGBHV button to toggle on and off.
The LED lights when selected.
Press the Audio button to toggle on and off.
The LED is unlit when deselected.

Figure 3-10 — Select RGBHV only

3. Press and release the Input 5 button (figure 3-11).

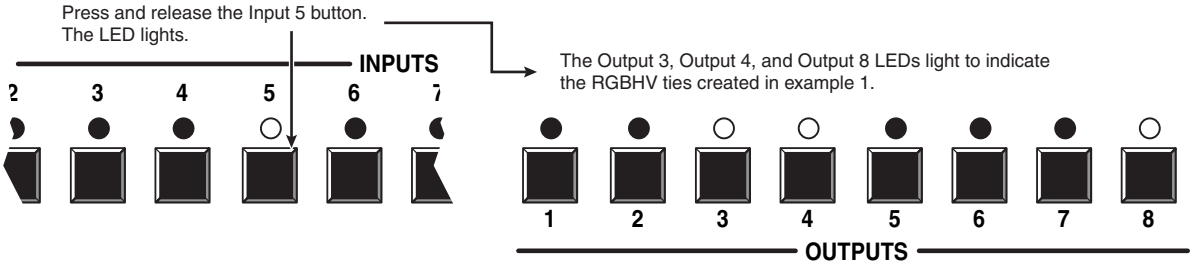


Figure 3-11 — Select an input

4. Press and release the Output 1 button (figure 3-12).

Figure 3-12 — Select the output

5. Press and release the Enter button (figure 3-13).

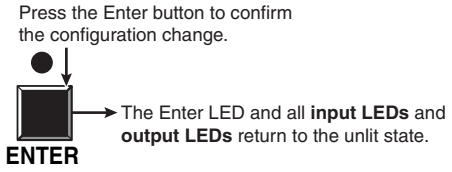

Press the Enter button to confirm
the configuration change.
The Enter LED and all **input LEDs** and
output LEDs return to the unlit state.
ENTER

Figure 3-13 — Press the Enter button

The current configuration (figure 3-14) is now:

- Input 5 (video) is tied to output 1, output 3, output 4, and output 8
- Input 5 (audio) is tied to output 3, output 4, and output 8

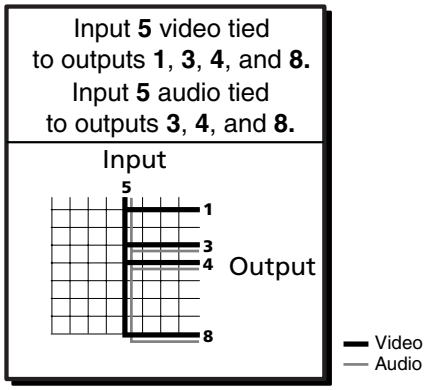


Figure 3-14 — Example 2, final configuration

Example 3: Removing a tie from a set of video and audio ties

In the following example, an existing audio tie is removed from the current configuration. The steps show the front panel indications that result from your action.

NOTE *This example assumes that you have performed example 1 and example 2.*

1. Press and release the Esc button (figure 3-15).

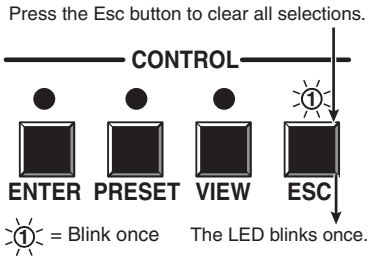


Figure 3-15 — Clear all selections

2. To select audio only for the tie, if necessary, press and release the RGBHV button and/or Audio button (figure 3-16).

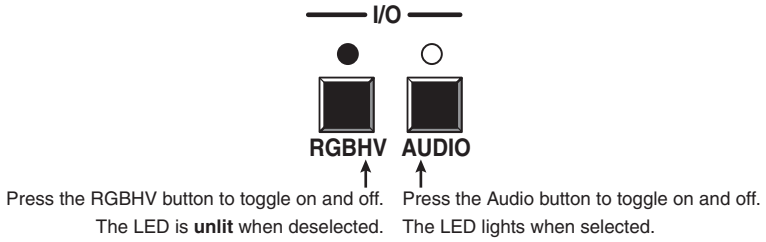

I/O
RGBHV
AUDIO
Press the RGBHV button to toggle on and off.
The LED is unlit when deselected.
Press the Audio button to toggle on and off.
The LED lights when selected.

Figure 3-16 — Select audio only

3. Press and release the Input 5 button (figure 3-17).

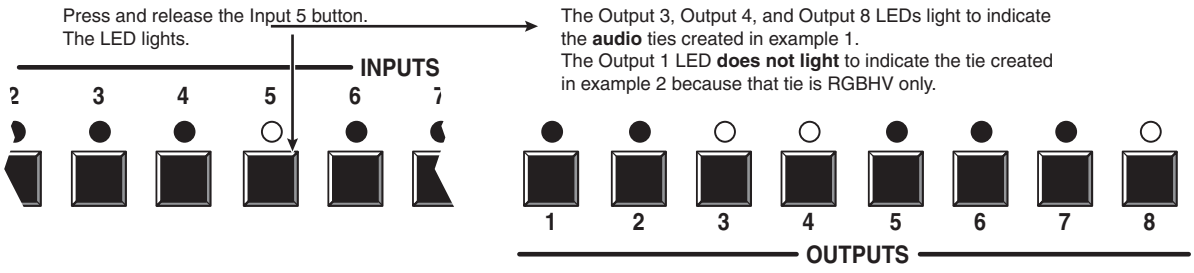


Figure 3-17 — Select an input

4. Press and release the Output 4 button (figure 3-18).

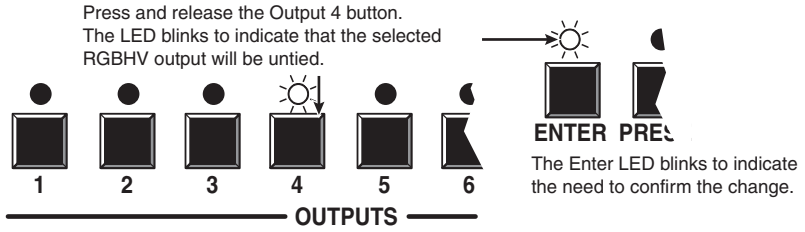


Figure 3-18 — Deselect the output

5. Press and release the Enter button (figure 3-19).

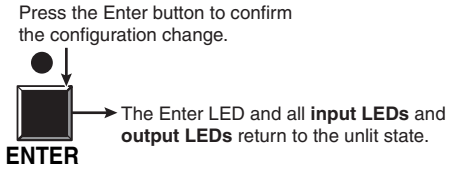

Press the Enter button to confirm the configuration change.
ENTER
The Enter LED and all **input LEDs** and **output LEDs** return to the unlit state.

Figure 3-19 — Press the Enter button

The current configuration (figure 3-20) is now:

- **Video** — Input 5 (video) is tied to output 1, output 3, output 4, and output 8
- **Audio** — Input 5 (audio) is tied to output 3 and output 8

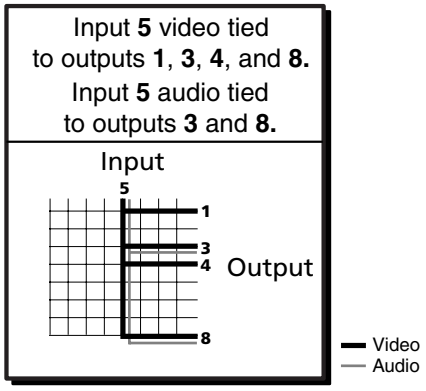


Figure 3-20 — Example 3, final configuration

Viewing a configuration

The current configuration can be viewed using the front panel buttons. The *View-Only* mode prevents inadvertent changes to the current configuration. *View-Only* mode also provides a way to mute video and audio outputs (see *Muting and unmuting video and/or audio* on page 3-18).

View the current configuration as follows:

1. Press the Esc button to clear any input LEDs, output LEDs, or control LEDs that are lit.
2. Press and release the View button. All of the LEDs for outputs that are **not** tied light.
3. Select video, audio, or both to view by pressing the RGBHV button and/or the Audio button.
4. Select the desired input or output(s) whose ties you wish to view by pressing the input and output buttons.

NOTE

- *When you enter View-Only mode, the output LEDs light for all outputs **without** ties. Likewise, when an output button for which there are no ties is pushed, the output LEDs turn on for all outputs without ties.*
- *To see all ties of the current configuration, press and release each input and output button, one at a time, with the RGBHV LED and the Audio LED lit.*
- *In View-Only mode, you can view video and audio, video-only, or audio-only ties. Pressing and releasing the RGBHV button and the Audio button toggles each on and off.*

Example 4: Viewing video and audio, audio only, and video only ties

The following steps show an example of viewing the video and audio, audio-only, and video-only ties in the current configuration. The steps show the front panel indications that result from your action.

NOTE *This example assumes that you have performed example 1, example 2, and example 3.*

1. Press and release the Esc button (figure 3-21).

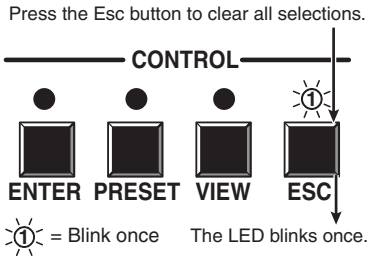


Figure 3-21 — Clear all selections

2. Press and release the View button to enter *View-Only* mode. The View LED lights.

3. To select both video and audio for viewing, if necessary, press and release the RGBHV button and the Audio button (figure 3-22).

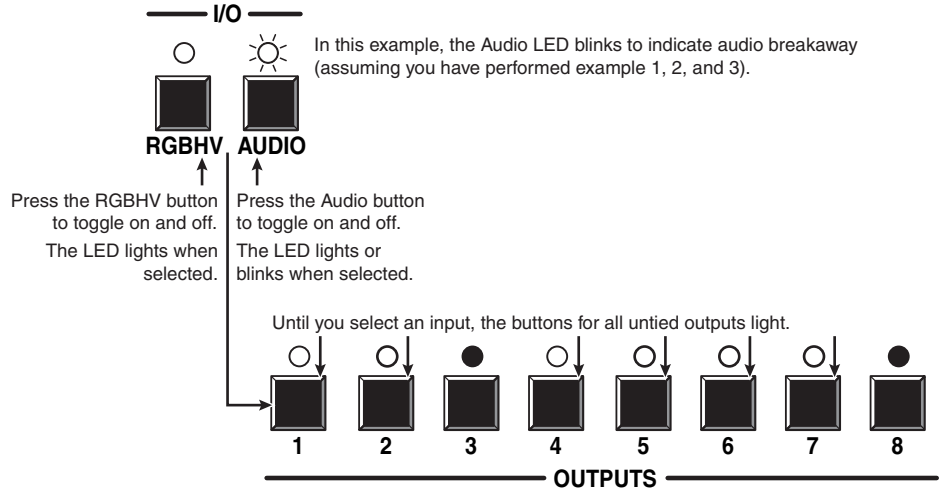

I/O
In this example, the Audio LED blinks to indicate audio breakaway (assuming you have performed example 1, 2, and 3).
RGBHV
AUDIO
Press the RGBHV button to toggle on and off.
The LED lights when selected.
Press the Audio button to toggle on and off.
The LED lights or blinks when selected.
Until you select an input, the buttons for all untied outputs light.
1
2
3
4
5
6
7
8
OUTPUTS

Figure 3-22 — Select RGBHV or video and audio

4. Press and release the Input 5 button (figure 3-23).

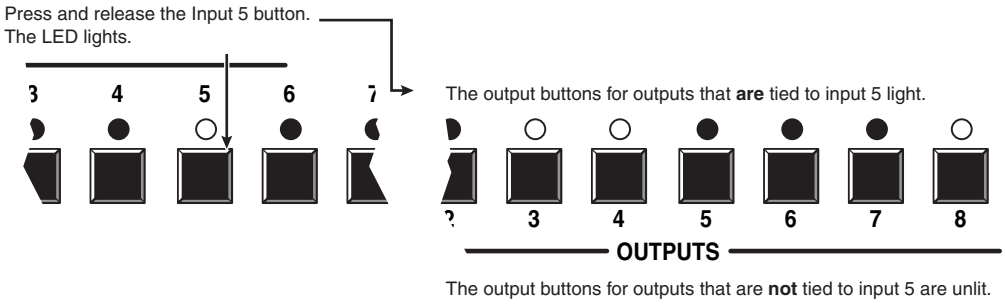


Figure 3-23 — Select an input

NOTE *You can also view a set of ties by selecting a tied output. To demonstrate this, note the number of a lit output LED, and then press and release the output button for an untied (unlit) output. Observe that all of the untied outputs' LEDs light. Then press the output button that you noted previously and observe that the selected output LED, the tied input LED (input 5), and the output LEDs light for all of the outputs that are tied to the input.*

5. Press and release the RGBHV button to deselect RGBHV (figure 3-24).

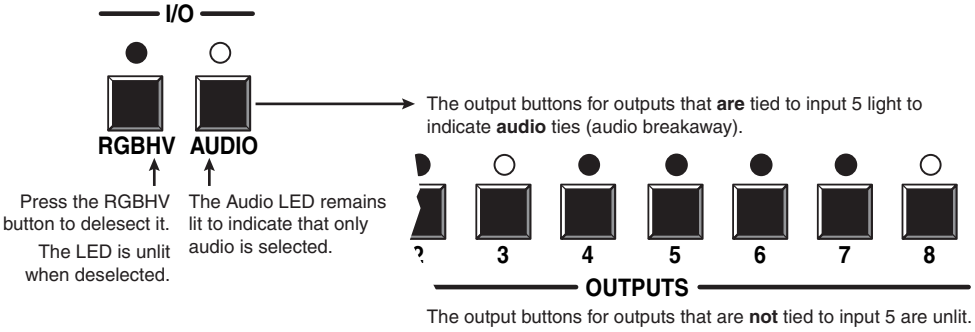

I/O
RGBHV
AUDIO
Press the RGBHV button to delesect it. The LED is unlit when deselected.
The Audio LED remains lit to indicate that only audio is selected.
The output buttons for outputs that are tied to input 5 light to indicate audio ties (audio breakaway).
3
4
5
6
7
8
OUTPUTS
The output buttons for outputs that are not tied to input 5 are unlit.

Figure 3-24 — Deselect RGBHV to view audio ties only

6. Press and release the RGBHV button and the Audio button to toggle the RGBHV LED lit and the Audio LED unlit (figure 3-25).

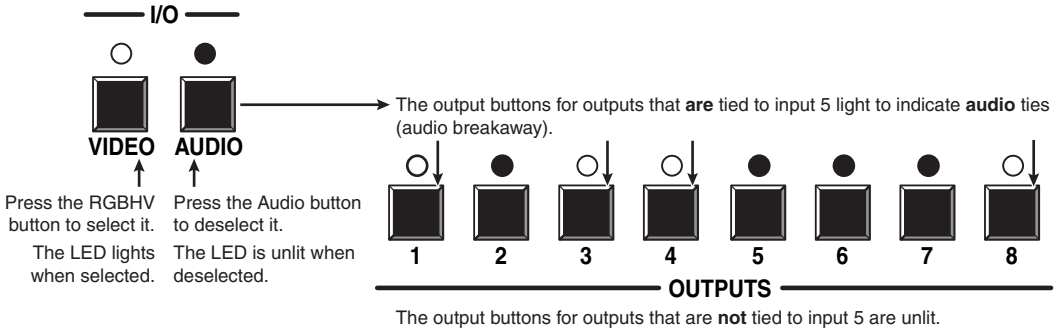

I/O
VIDEO
AUDIO
Press the RGBHV button to select it. The LED lights when selected.
Press the Audio button to deselect it. The LED is unlit when deselected.
The output buttons for outputs that are tied to input 5 light to indicate audio ties (audio breakaway).
1
2
3
4
5
6
7
8
OUTPUTS
The output buttons for outputs that are not tied to input 5 are unlit.

Figure 3-25 — Deselect audio and select RGBHV to view RGBHV only

If video ties are established for input 5, the output LEDs for all video outputs tied to input 5 light. If no ties are established for input 5, all output LEDs return to the unlit state.

7. Press and release the View button to exit *View-Only* mode (figure 3-26).

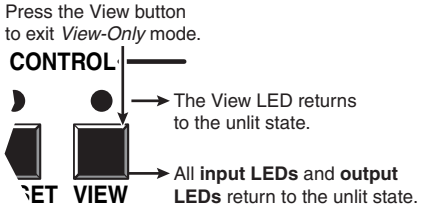

Press the View button to exit View-Only mode.
CONTROL
VIEW
The View LED returns to the unlit state.
All input LEDs and output LEDs return to the unlit state.

Figure 3-26 — Press the View button to exit* View-Only *mode

Muting and unmuting video and/or audio

Individual outputs can be muted or unmuted as follows:

1. Press the Esc button to clear any input LEDs, output LEDs, or control LEDs that are lit.
2. Press and release the View button.
3. Select video, audio, or both to mute or unmute by pressing the RGBHV button and/or the Audio button.
4. One at a time, press and **hold** the output button(s) for the desired output(s) for approximately 2 seconds. The output LED(s) for the selected output(s) blink to indicate the mute or return to their previous state to indicate the unmute.
5. Press and release the View button to return to normal switcher operation.

NOTE

- *You can mute video and audio, video-only, or audio-only outputs. Pressing and releasing the RGBHV button and the Audio button toggles each selection on and off.*
- *When you enter View-Only mode, the output LEDs turn **on** for all outputs **without** ties.*
- *The video mute function mutes the R, G, and B planes only; the H and V planes are still active.*
- *Mutes are saved to non-volatile memory. When power is removed and restored, the mute settings are retained.*

Example 5: Muting and unmuting an output

The following steps show an example in which several matrix switcher outputs are muted and unmuted. The steps show the front panel indications that result from your actions.

1. Press and release the Esc button (figure 3-27).

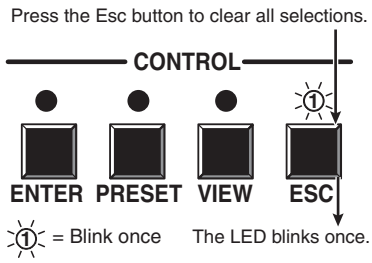


Figure 3-27 — Clear all selections

2. Press and release the View button to enter *View-Only* mode. The View LED lights.

3. To select both video and audio for viewing and muting, if necessary, press and release the RGBHV button and the Audio button (figure 3-28).

NOTE *This example shows the indications that the front panel displays if example 1, example 2, and example 3 have been completed.*

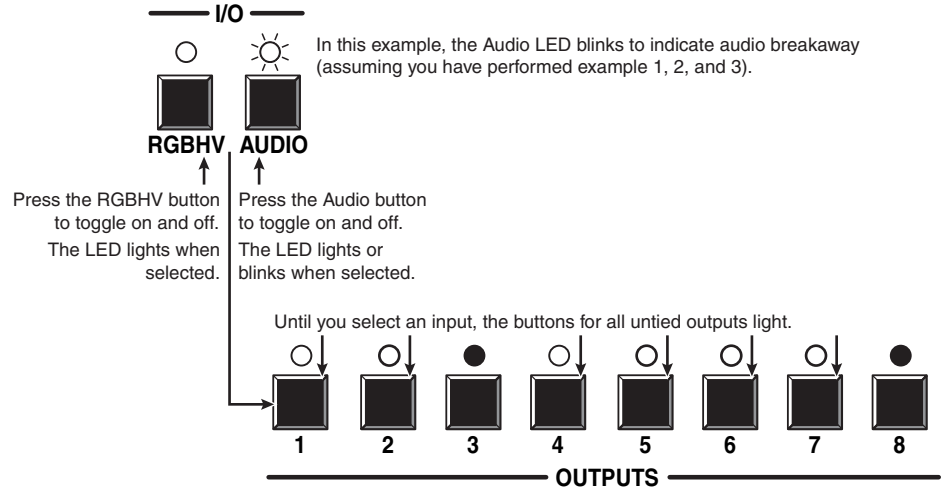

I/O
In this example, the Audio LED blinks to indicate audio breakaway (assuming you have performed example 1, 2, and 3).
RGBHV
AUDIO
Press the RGBHV button to toggle on and off.
The LED lights when selected.
Press the Audio button to toggle on and off.
The LED lights or blinks when selected.
Until you select an input, the buttons for all untied outputs light.
1
2
3
4
5
6
7
8
OUTPUTS

Figure 3-28 — Select RGBHV and audio

4. Press and **hold** the Output 3 button and the Output 4 button (figure 3-29) for approximately 2 seconds until the LEDs begin to blink. The output 3 and output 4 video and audio signals are muted.

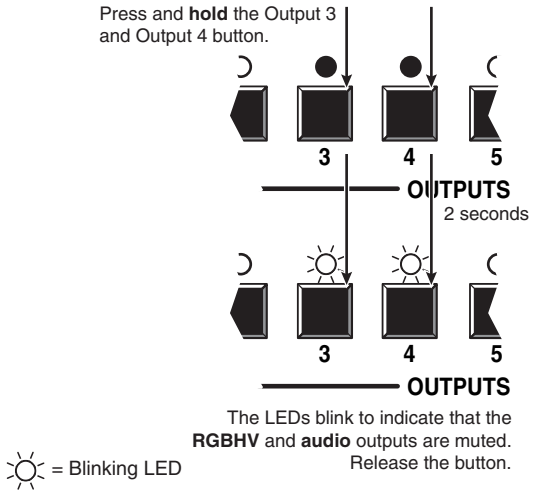


Figure 3-29 — Mute the outputs

NOTE *If both RGBHV and audio are selected, the mute action toggles both the video and audio outputs. If either the video output or the audio output is already muted, the unmuted output is muted and the muted output is unmuted.*

NOTE *If both RGBHV and audio are selected and only video is muted, the output LED flashes. If only audio is selected, the output LED is lit steadily (indicating no audio mute).*

5. Press and **hold** the Output 3 button and the Output 4 button (figure 3-30) for approximately 2 seconds until the LEDs light steadily. The output 3 and output 4 video and audio signals are unmuted.

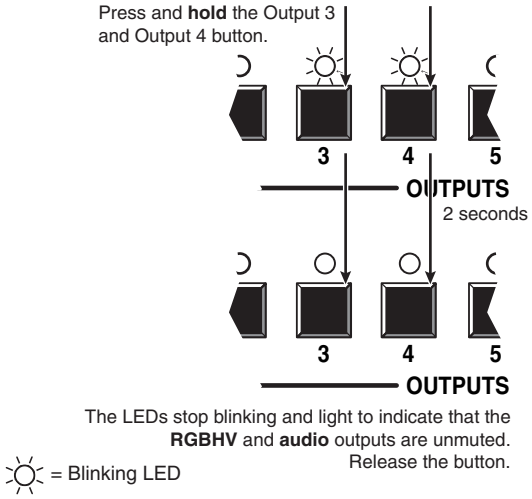


Figure 3-30 — Unmute the outputs

NOTE *If both RGBHV and audio are selected, the unmute action toggles both the video and audio outputs. If either the video output or the audio output is already unmuted, the muted output is unmuted and the unmuted output is muted.*

6. Press and release the View button to exit *View-Only* mode (figure 3-31).

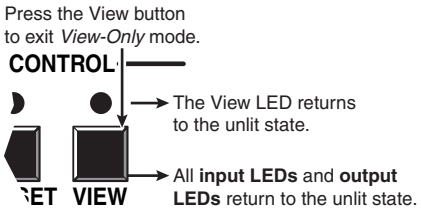

Press the View button to exit *View-Only* mode.
CONTROL
The View LED returns to the unlit state.
VIEW
All **input LEDs** and **output LEDs** return to the unlit state.

Figure 3-31 — Press the View button to exit* View-Only *mode

Using global presets

The current configuration (configuration 0) can be saved as a preset in any one of 32 preset memory addresses. Preset locations are assigned to the input buttons and output buttons. Up to 20 presets can be selected from the front panel to be either saved or retrieved. When a **preset** is retrieved from memory, it becomes the **current configuration**.

NOTE

- *Only the audio and video ties are stored and recalled; audio gain settings are not saved, and they do not change when a preset is recalled.*
- *Presets **cannot** be viewed from the front panel unless recalled as the current configuration. Presets **can** be viewed using Extron's Windows-based control program. See Chapter 5,* Matrix Software*, for more details.*
- *The current configuration and all presets are stored in non-volatile memory. When power is removed and restored, the current configuration is still active and all presets are retained.*
- *When a preset is recalled, it replaces the current configuration, which is lost unless it is also stored as a preset. The recalled preset overwrites all of the current configuration ties in favor of the preset configuration ties.*
- *Preset numbers greater than 20 (that are too high to be available from the front panel) are still accessible under RS-232/RS-422 control.*
- *Figure 3-32 shows the presets associated with the various input and output buttons.*

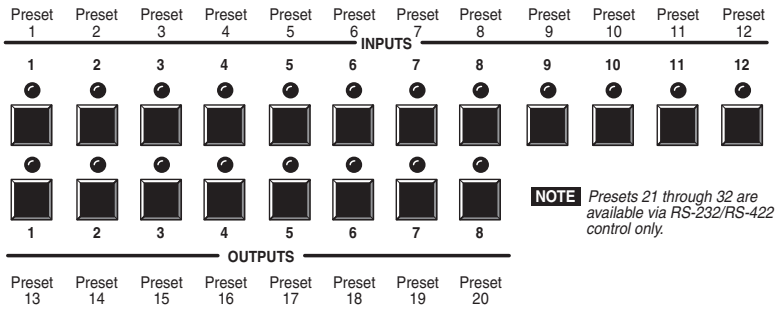


Figure 3-32 — Preset locations

Example 6: Saving a preset

The following steps show an example in which the current configuration is saved as a preset. The steps show the front panel indications that result from your actions.

1. Press and release the Esc button (figure 3-33).

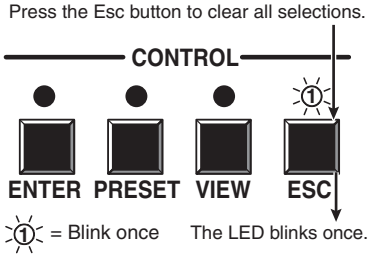


Figure 3-33 — Clear all selections

2. Press and **hold** the Preset button for approximately 2 seconds until the Preset LED blinks (figure 3-34).

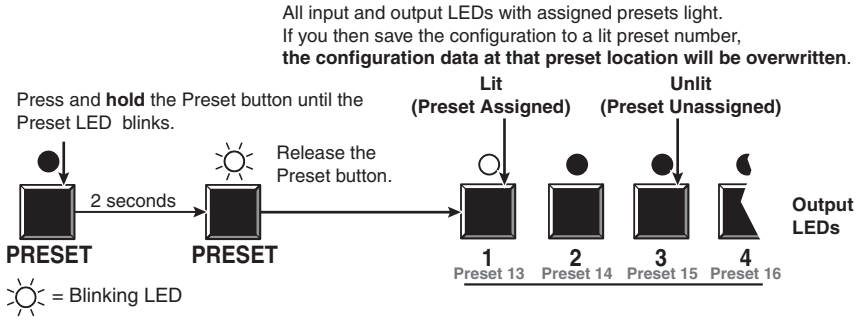


Figure 3-34 — Enter* Save Preset *mode

3. Press and release the Output 1 button (figure 3-35).

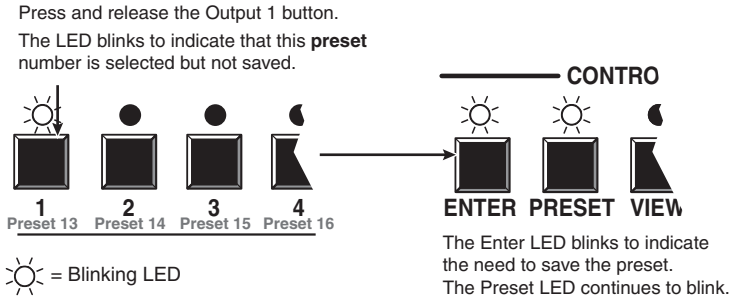


Figure 3-35 — Select the preset

4. Press and release the Enter button (figure 3-36). The current configuration is now stored in memory location 13.

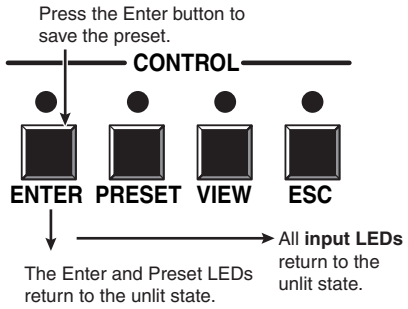


Figure 3-36 — Press the Enter button

Example 7: Recalling a preset

The following steps show an example in which a preset is recalled to become the current configuration. The steps show the front panel indications that result from your actions.

1. Press and release the Esc button (figure 3-37).

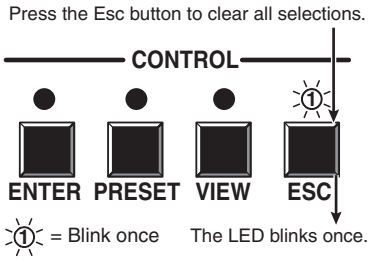


Figure 3-37 — Clear all selections

2. Press and release the Preset button (figure 3-38).

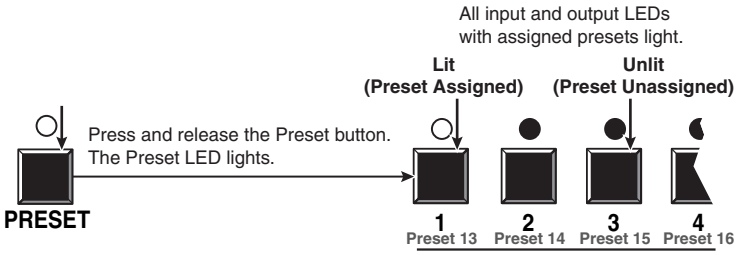


Figure 3-38 — Enter* Recall Preset *mode

3. Press and release the Output 1 button (figure 3-39).

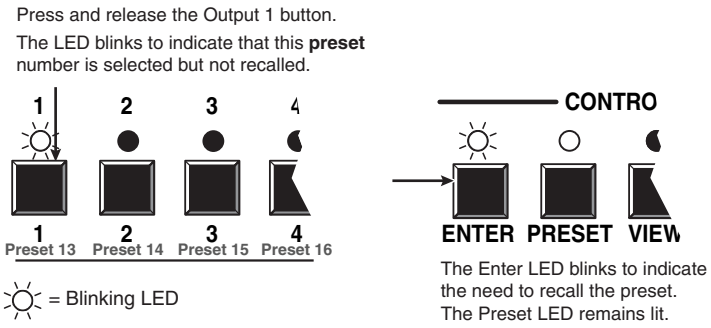


Figure 3-39 — Select the preset

4. Press and release the Enter button (figure 3-40). The configuration stored in memory location 13 is now the current configuration and can be viewed in the *View-Only* mode (see example 4).

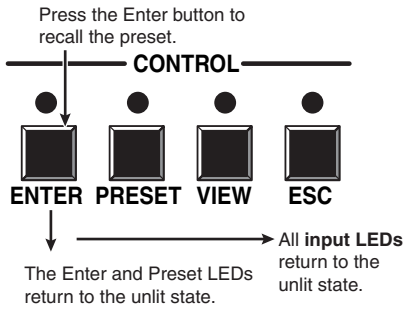


Figure 3-40 — Press the Enter button

Viewing and adjusting the input audio level

The audio level of each input can be displayed and adjusted through a range of -18 dB to +24 dB to ensure that there is no noticeable volume difference among sources (figure 3-41). The audio level can be adjusted from the front panel or under RS-232/RS-422 control.

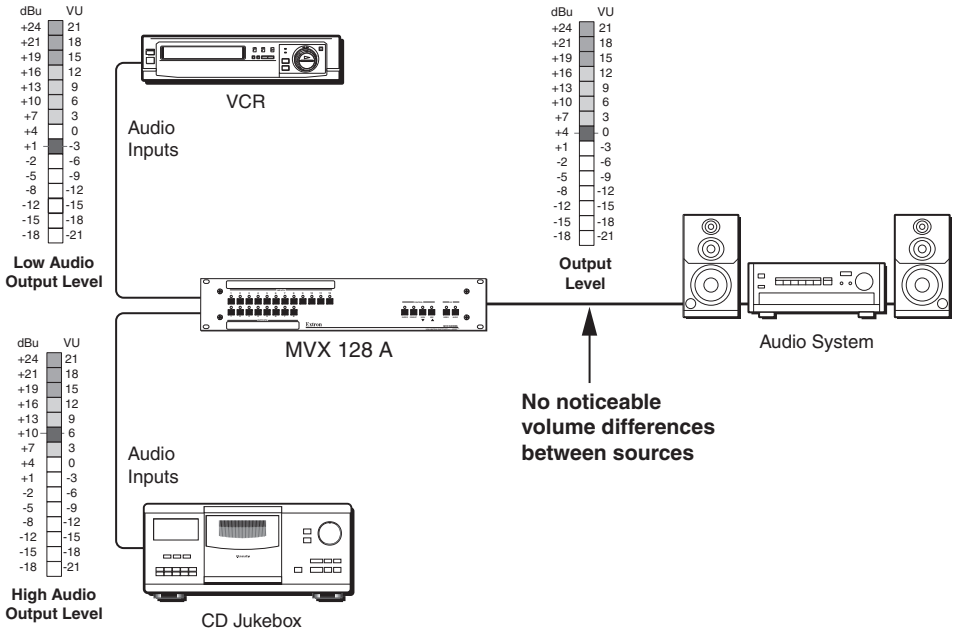


Figure 3-41 — Audio gain and attenuation

1. Press the Esc button to clear any input LEDs, output LEDs, or control LEDs that are lit.
2. To enter the Audio mode, press and **hold** the Audio button until the LED begins to blink, then release the button.

3. Press and release an input button to select an input. The output LEDs display the audio level for the selected input and the Esc (▲) and View (▼) LED display the polarity (gain [+] or attenuation [–]). Each output LED indicates 1 dB when blinking slowly, 2 dB when blinking quickly, and 3 dB when lit. See the table at right.

4. Press and release the Esc (▲) and View (▼) buttons to increase and decrease the audio level by 1 dB per each push of the button, or press and **hold** the button to change the level at a rate of 3 dB per second until the button is released or the upper or lower limit is reached.

5. Press and release the Audio button to exit the *Audio* mode. The Audio LED stops blinking.

NOTE

- *Pressing the Enter or Preset button also exits Audio mode. Pressing the Preset button changes to Recall Preset mode.*
- *There is one audio level setting per input. The audio level setting is shared by the left and right audio inputs.*
- *The audio level settings are stored in non-volatile memory. When power is removed and restored, the audio level settings are retained.*
- *Exiting Audio mode by pressing the Audio button always returns the I/O configuration to RGBHV and audio selected for configuration.*

Audio input level settings

	Output LED								View Esc		
dB	1	2	3	4	5	6	7	8	▼	▲	dB
+24	○	○	○	○	○	○	○	○	●	○	+24
+23	○	○	○	○	○	○	○	Ⓕ	●	○	+23
+22	○	○	○	○	○	○	○	Ⓢ	●	○	+22
+21	○	○	○	○	○	○	○	●	●	○	+21
+20	○	○	○	○	○	○	Ⓕ	●	●	○	+20
+19	○	○	○	○	○	○	Ⓢ	●	●	○	+19
+18	○	○	○	○	○	○	●	●	●	○	+18
+17	○	○	○	○	○	Ⓕ	●	●	●	○	+17
+16	○	○	○	○	○	Ⓢ	●	●	●	○	+16
+15	○	○	○	○	○	●	●	●	●	○	+15
+14	○	○	○	○	Ⓕ	●	●	●	●	○	+14
+13	○	○	○	○	Ⓢ	●	●	●	●	○	+13
+12	○	○	○	○	●	●	●	●	●	○	+12
+11	○	○	○	Ⓕ	●	●	●	●	●	○	+11
+10	○	○	○	Ⓢ	●	●	●	●	●	○	+10
+9	○	○	○	●	●	●	●	●	●	○	+9
+8	○	○	Ⓕ	●	●	●	●	●	●	○	+8
+7	○	○	Ⓢ	●	●	●	●	●	●	○	+7
+6	○	○	●	●	●	●	●	●	●	○	+6
+5	○	Ⓕ	●	●	●	●	●	●	●	○	+5
+4	○	Ⓢ	●	●	●	●	●	●	●	○	+4
+3	○	●	●	●	●	●	●	●	●	○	+3
+2	Ⓕ	●	●	●	●	●	●	●	●	○	+2
+1	Ⓢ	●	●	●	●	●	●	●	●	○	+1
0	●	●	●	●	●	●	●	●	●	○	0
-1	Ⓢ	●	●	●	●	●	●	●	○	●	-1
-2	Ⓕ	●	●	●	●	●	●	●	○	●	-2
-3	○	●	●	●	●	●	●	●	○	●	-3
-4	○	Ⓢ	●	●	●	●	●	●	○	●	-4
-5	○	Ⓕ	●	●	●	●	●	●	○	●	-5
-6	○	○	●	●	●	●	●	●	○	●	-6
-7	○	○	Ⓢ	●	●	●	●	●	○	●	-7
-8	○	○	Ⓕ	●	●	●	●	●	○	●	-8
-9	○	○	○	●	●	●	●	●	○	●	-9
-10	○	○	○	Ⓢ	●	●	●	●	○	●	-10
-11	○	○	○	Ⓕ	●	●	●	●	○	●	-11
-12	○	○	○	○	●	●	●	●	○	●	-12
-13	○	○	○	○	Ⓢ	●	●	●	○	●	-13
-14	○	○	○	○	Ⓕ	●	●	●	○	●	-14
-15	○	○	○	○	○	●	●	●	○	●	-15
-16	○	○	○	○	○	Ⓢ	●	●	○	●	-16
-17	○	○	○	○	○	Ⓕ	●	●	○	●	-17
-18	○	○	○	○	○	○	●	●	○	●	-18
	1	2	3	4	5	6	7	8			

○ = on, Ⓕ = blinking fast, Ⓢ = blinking slowly, ● = off

Example 10: Viewing and adjusting an input audio level

In the following example, an audio level is viewed and adjusted. The steps show the front panel indications that result from your action.

1. Press and release the Esc button (figure 3-42).

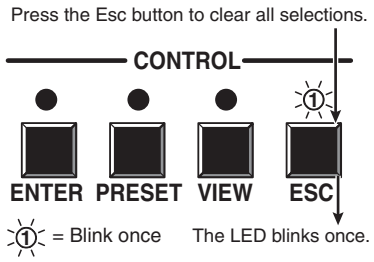


Figure 3-42 — Clear all selections

2. Press and **hold** the Audio button for approximately 2 seconds until the Audio LED blinks (figure 3-43).

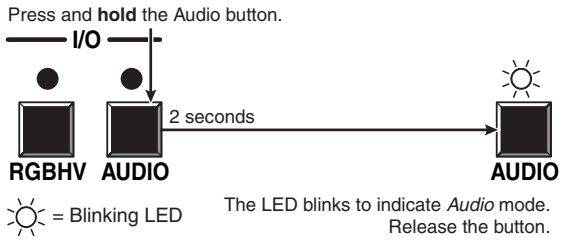


Figure 3-43 — Select* Audio *mode

3. Press and release the Input 5 button (figure 3-44).

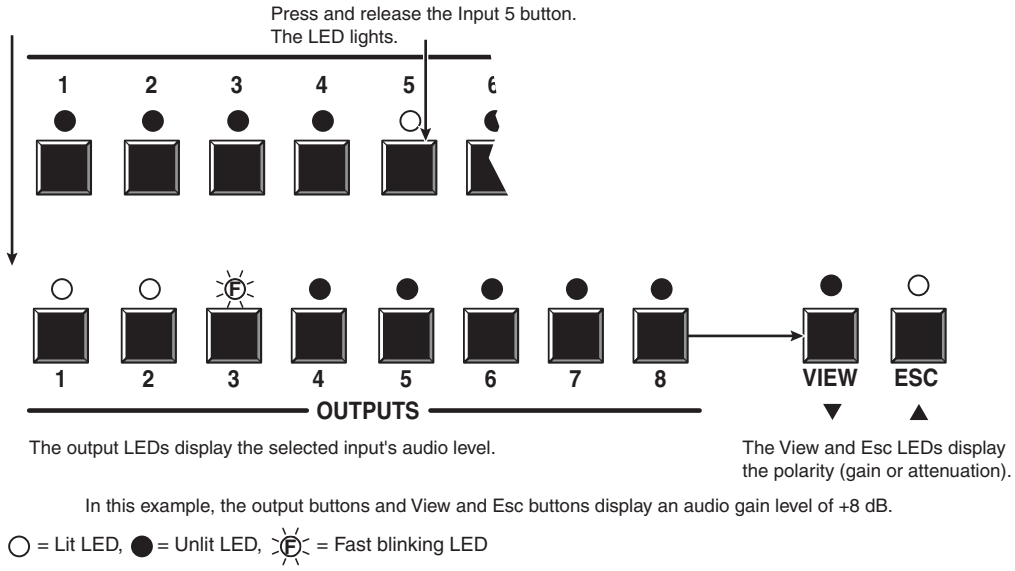

Press and release the Input 5 button.
The LED lights.
1
2
3
4
5
6
7
8
VIEW
ESC
OUTPUTS
The output LEDs display the selected input's audio level.
The View and Esc LEDs display the polarity (gain or attenuation).
In this example, the output buttons and View and Esc buttons display an audio gain level of +8 dB.
= Lit LED, = Unlit LED, = Fast blinking LED

Figure 3-44 — Select an input and read the audio level

4. Press and release the View (▼) button once (figure 3-45) to decrease the input audio level by 1 dB.

   Press and release the View (▼) button several more times (figure 3-45) to decrease the input audio level by 1 dB per button push. Note the output button indication changes that occur each time the View (▼) button is pressed.

   Figure 3-45 shows the result of pressing the View (▼) button a total of nine times. Note that the level is now displayed in red to indicate a negative level.

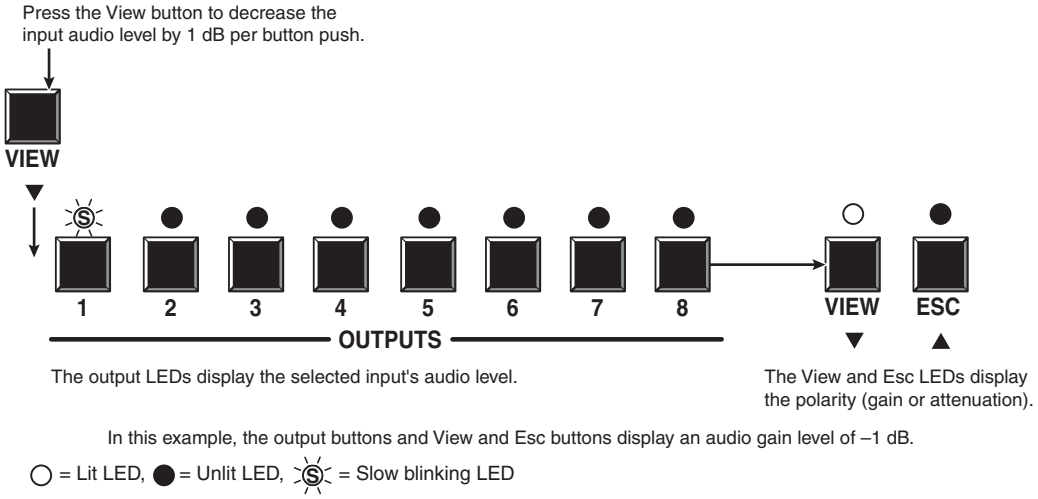

Press the View button to decrease the input audio level by 1 dB per button push.
VIEW
1
2
3
4
5
6
7
8
OUTPUTS
VIEW
ESC
The output LEDs display the selected input's audio level.
The View and Esc LEDs display the polarity (gain or attenuation).
In this example, the output buttons and View and Esc buttons display an audio gain level of –1 dB.
= Lit LED, = Unlit LED, = Slow blinking LED

Figure 3-45 — Adjust the input audio level

5. Press and release the Audio button (figure 3-46).

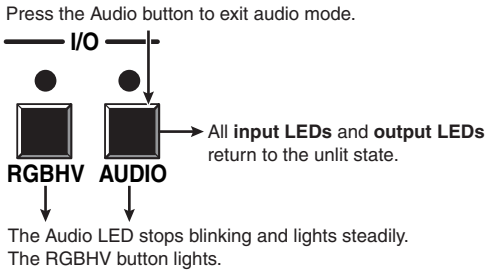

Press the Audio button to exit audio mode.
I/O
RGBHV
AUDIO
All input LEDs and output LEDs return to the unlit state.
The Audio LED stops blinking and lights steadily.
The RGBHV button lights.

Figure 3-46 — Deselect* Audio *mode

Viewing and adjusting the output volume

The audio level of each output can be displayed and adjusted through a range of 100% (no attenuation) to 0% (maximum [98 dB] attenuation). The audio level can be adjusted from the front panel or under RS-232/RS-422 control.

1. Press the Esc button to clear any input LEDs, output LEDs, or control LEDs that are lit.
2. To enter the Audio mode, press and **hold** the Audio button until the LED begins to blink, then release the button.
3. Press and release an output button to select an output. The input LEDs display the volume level for the selected output. The switchers indicate the volume differently, depending on number of input LEDs, but as a general rule, the more LEDs that are lit, the higher the volume. The fewer LEDs that are lit, the lower the volume.

   For a more detailed analysis of decoding the displayed value, see *Reading the displayed volume* on the next page.
4. Press and release the Esc (▲) and View (▼) buttons to increase and decrease the audio volume by 1 dB per each push of the button or press and **hold** the button to change the level at a rate of 3 dB per second until the button is released or the upper or lower limit is reached.
5. Press and release the Audio button to save the audio settings and exit the *Audio* mode. The Audio button stops blinking.

NOTE

- *There is one audio volume level setting per output. The audio level setting is shared by the left and right audio inputs.*
- *The audio volume levels are stored in non-volatile memory. When power is removed and restored, the audio level settings are retained.*
- *Exiting* Audio *mode by pressing the Audio button always returns the I/O LEDs to both RGBHV and Audio lit.*
- *Pressing the Enter or Preset button also exits* Audio *mode. Pressing the Preset button changes to* Recall Preset *mode.*

Reading the displayed volume

NOTE *This section is a detailed look at reading the output volume display on the matrix switcher's front panel. If you do not need to read the exact value of the volume setting, skip this section.*

There are 65 steps of volume attenuation, with 1 dB per step (button push), except for 0-to-1, which is 35 dB. At maximum attenuation, no input LEDs are lit, 98 dB of attenuation is applied, and the audio output is effectively muted. At no attenuation, all input LEDs are lit and the output volume is equal to the input signal plus any gain or attenuation that is applied to that specific input using the input audio level adjustment. See *Viewing and adjusting the input audio level*, on page 3-24 See the table at right to read the volume display.

The input LEDs blink or light sequentially to indicate the approximate volume of the selected output. Volume is defined as a percentage of the input audio signal that is applied to the output. From 0% of volume, the first Esc (▲) button push applies 5.5% of the input audio signal and causes the Input 1 LED to blink slowly. From 5.5% on, each Esc (▲) push applies 1.5% more of the input audio signal to the output:

- **Push Esc (▲) button —** 5.5% + 1.5% = 7% volume. The Input 1 LED continues blinking slowly.
- **Push Esc (▲) button twice —** 7% + 1.5% + 1.5% = 10% volume. The Input 1 LED begins to blink quickly.
- **Push Esc (▲) button 19 times —** 10% + (19•1.5%) = 38.5% volume. The Input 1 through 4 LEDs light steadily.

Audio output volume settings

Output volume	dB of attenuation	Input LED 1	2	3	4	5	6	7	8	9	10	11	12
0%	98	●	●	●	●	●	●	●	●	●	●	●	●
5.5%	63	Ⓢ	●	●	●	●	●	●	●	●	●	●	●
7%	62												
8.5%	61	Ⓕ	●	●	●	●	●	●	●	●	●	●	●
10%	60												
11.5%	59	○	●	●	●	●	●	●	●	●	●	●	●
13%	58	○	Ⓢ	●	●	●	●	●	●	●	●	●	●
14.5%	57												
16%	56	○	Ⓕ	●	●	●	●	●	●	●	●	●	●
17.5%	55												
19%	54												
20.5%	53	○	○	●	●	●	●	●	●	●	●	●	●
22%	52	○	○	Ⓢ	●	●	●	●	●	●	●	●	●
23.5%	51												
25%	50	○	○	Ⓕ	●	●	●	●	●	●	●	●	●
26.5%	49												
28%	48												
29.5%	47	○	○	○	●	●	●	●	●	●	●	●	●
31%	46	○	○	○	Ⓢ	●	●	●	●	●	●	●	●
32.5%	45												
34%	44	○	○	○	Ⓕ	●	●	●	●	●	●	●	●
35.5%	43												
37%	42												
38.5%	41	○	○	○	○	●	●	●	●	●	●	●	●
40%	40	○	○	○	○	Ⓢ	●	●	●	●	●	●	●
41.5%	39												
43%	38	○	○	○	○	Ⓕ	●	●	●	●	●	●	●
44.5%	37												
46%	36												
47.5%	35	○	○	○	○	○	●	●	●	●	●	●	●
49%	34	○	○	○	○	○	Ⓢ	●	●	●	●	●	●
50.5%	33												
52%	32	○	○	○	○	○	Ⓕ	●	●	●	●	●	●
53.5%	31												
55%	30	○	○	○	○	○	○	●	●	●	●	●	●
56.5%	29	○	○	○	○	○	○	Ⓢ	●	●	●	●	●
58%	28												
59.5%	27	○	○	○	○	○	○	Ⓕ	●	●	●	●	●
61%	26												
62.5%	25	○	○	○	○	○	○	○	●	●	●	●	●
64%	24	○	○	○	○	○	○	○	Ⓢ	●	●	●	●
65.5%	23												
67%	22	○	○	○	○	○	○	○	Ⓕ	●	●	●	●
68.5%	21												
70%	20	○	○	○	○	○	○	○	○	●	●	●	●
71.5%	19	○	○	○	○	○	○	○	○	Ⓢ	●	●	●
73%	18												
74.5%	17	○	○	○	○	○	○	○	○	Ⓕ	●	●	●
76%	16												
77.5%	15	○	○	○	○	○	○	○	○	○	●	●	●
79%	14	○	○	○	○	○	○	○	○	○	Ⓢ	●	●
80.5%	13												
82%	12	○	○	○	○	○	○	○	○	○	Ⓕ	●	●
83.5%	11												
85%	10	○	○	○	○	○	○	○	○	○	○	●	●
86.5%	9	○	○	○	○	○	○	○	○	○	○	Ⓢ	●
86%	8												
89.5%	7	○	○	○	○	○	○	○	○	○	○	Ⓕ	●
91%	6												
92.5%	5	○	○	○	○	○	○	○	○	○	○	○	●
94%	4	○	○	○	○	○	○	○	○	○	○	○	Ⓢ
95.5%	3												
97%	2	○	○	○	○	○	○	○	○	○	○	○	Ⓕ
98.5%	1												
100%	0	○	○	○	○	○	○	○	○	○	○	○	○
		1	2	3	4	5	6	7	8	9	10	11	12

○ = on, Ⓕ = blinking fast, Ⓢ = blinking slowly, ● = off

When all input LEDs are lit, the audio output is 100% of the audio input level.

Another way to view the volume level is to think in terms of the attenuation that is applied to the output. Attenuation reduction is indicated by the lit or blinking input LEDs: when fewer input LEDs are lit, attenuation is greater (and the volume is less).

- At minimum volume, all input LEDs are unlit and 98 dB of attenuation is applied to the output. The audio output is effectively muted.
- The first step of volume increase causes the Input 1 LED to blink slowly. Attenuation is reduced by 35 dB (63 dB of attenuation is applied to the output). There is no change in the volume indication.
- The second step of volume increase reduces the attenuation by an additional 1 dB (62 dB of attenuation is applied to the output). The front panel display is unchanged.
- Successive steps of volume increase cause consecutive input LEDs to first blink slowly, then quickly, and then light steadily.

  For example: When lit steadily, the Input 3 LED indicates 47 dB of attenuation when compared to the Input 3 LED blinking quickly (48 dB to 50 dB of attenuation). The blinking Input 4 LED (45 dB to 46 dB of attenuation) is at least 2 dB less than the fast blinking Input 3 LED (48 dB – 46 dB) and at most 5 dB less (50 dB – 45 dB).

See the table on page 3-29 to read the volume display.

Example 11: Viewing and adjusting an output volume level

In the following example, the audio output volume is viewed and adjusted. The steps show the front panel indications that result from your action.

1. Press and release the Esc button (figure 3-47).

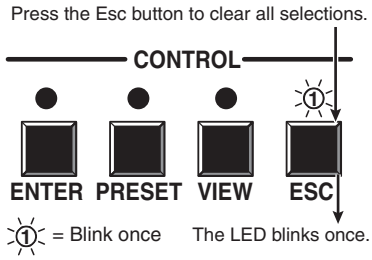


Figure 3-47 — Clear all selections

2. Press and **hold** the Audio button for approximately 2 seconds (figure 3-48).

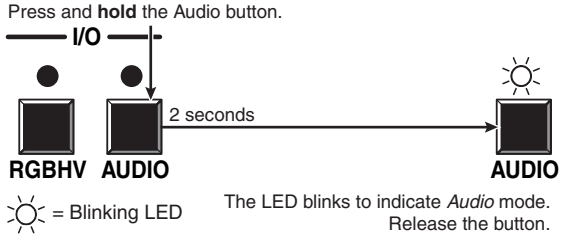


Figure 3-48 — Select* Audio *mode

3. Press and release the Output 1 button (figure 3-49).

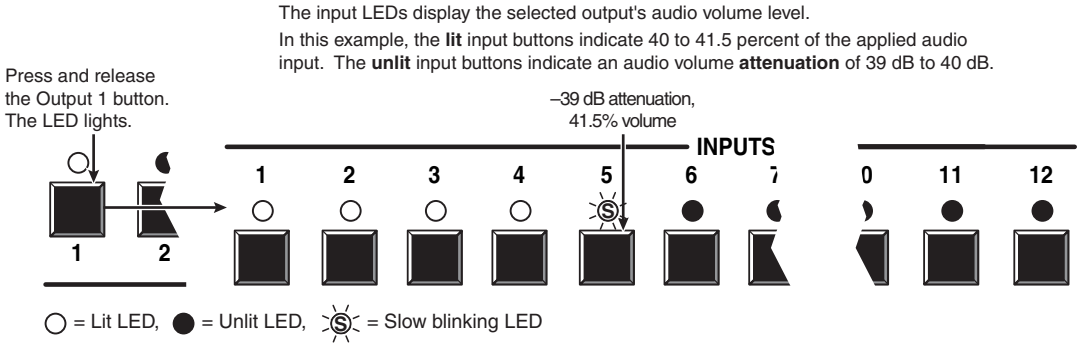

The input LEDs display the selected output's audio volume level.
In this example, the lit input buttons indicate 40 to 41.5 percent of the applied audio input. The unlit input buttons indicate an audio volume attenuation of 39 dB to 40 dB.
Press and release the Output 1 button. The LED lights.
–39 dB attenuation, 41.5% volume
INPUTS
1 2 3 4 5 6 7 10 11 12
1 2
○ = Lit LED, ● = Unlit LED, Ⓢ = Slow blinking LED

Figure 3-49 — Select output 1

4. Press and release the Esc (▲) button once (figure 3-50) to increase the volume by 1.5%.

   Press and release the Esc (▲) button several more times (figure 3-50) to increase the volume by 1.5% per button push. Note the input LED indication changes that occur each time the Esc (▲) button is pressed and released.

NOTE *You can press and **hold** the Esc (▲) or View (▼) button to ramp the level up or down by 3 dB per second to the high or low limit.*

   Figure 3-50 show the result of pressing the Esc (▲) button a total of 13 times.

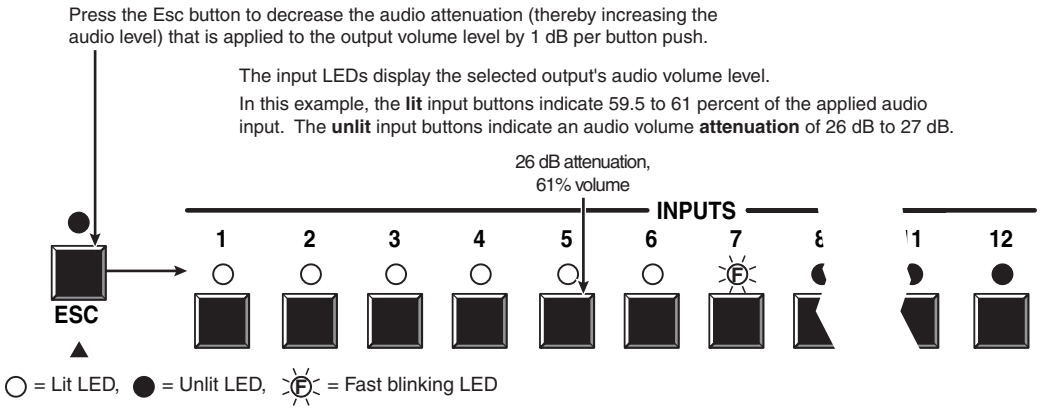

Press the Esc button to decrease the audio attenuation (thereby increasing the audio level) that is applied to the output volume level by 1 dB per button push.
The input LEDs display the selected output's audio volume level.
In this example, the lit input buttons indicate 59.5 to 61 percent of the applied audio input. The unlit input buttons indicate an audio volume attenuation of 26 dB to 27 dB.
26 dB attenuation, 61% volume
INPUTS
1 2 3 4 5 6 7 8 11 12
ESC
○ = Lit LED, ● = Unlit LED, Ⓕ = Fast blinking LED

Figure 3-50 — Adjust the output audio volume

5. Press and release the Audio button (figure 3-51).

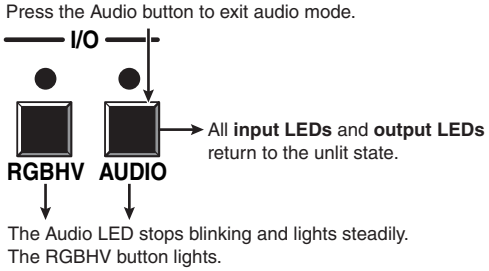

Press the Audio button to exit audio mode.
I/O
All input LEDs and output LEDs return to the unlit state.
RGBHV AUDIO
The Audio LED stops blinking and lights steadily.
The RGBHV button lights.

Figure 3-51 — Deselect* Audio *mode

Locking out the front panel (*Executive* mode)

The front panel lock (*Executive* mode) limits the operation of the matrix switcher from the front panel. When the switcher is locked, all of the front panel functions are disabled except for the *View-Only* mode functions. See *Viewing a configuration* on page 3-15. Other than in *View-Only* mode, if the user pushes a front panel output button when the switcher is locked, the RGBHV and Audio LEDs flash twice and return to their previous state.

To toggle the front panel lock on or off, press and **hold** the RGBHV button and the Audio button for approximately two seconds (figure 3-52).

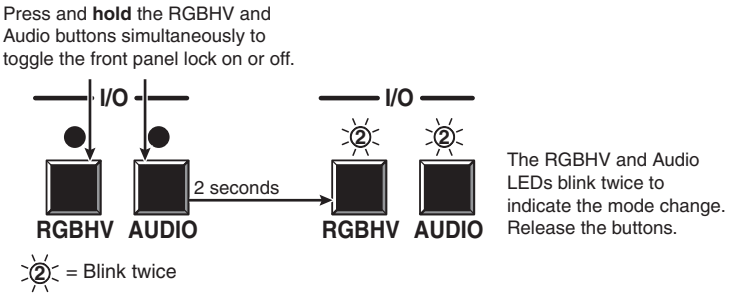

Press and **hold** the RGBHV and Audio buttons simultaneously to toggle the front panel lock on or off.
I/O
I/O
2 seconds
RGBHV
AUDIO
RGBHV
AUDIO
The RGBHV and Audio LEDs blink twice to indicate the mode change. Release the buttons.
= Blink twice

Figure 3-52 — Toggle front panel lock on or off

Performing a system reset from the front panel

The front panel reset is identical to the Esc ZXXX ← SIS command (see chapter 4, *Programmer's Guide*). A system reset:

- Clears all ties and presets
- Clears all video and audio mutes
- Sets all input audio levels to unity gain (+0 dB)
- Sets all output volume levels to 100% (0 dB of attenuation)

Reset the switcher to the factory default settings by pressing and **holding** the RGBHV button and Audio button **while** you apply AC power to the switcher (figure 3-53).

NOTE *System reset does not replace user-installed firmware.*

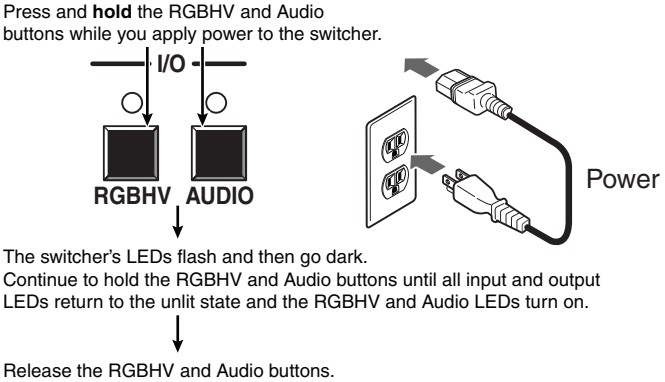

Press and **hold** the RGBHV and Audio buttons while you apply power to the switcher.
I/O
RGBHV
AUDIO
Power
The switcher's LEDs flash and then go dark.
Continue to hold the RGBHV and Audio buttons until all input and output LEDs return to the unlit state and the RGBHV and Audio LEDs turn on.
Release the RGBHV and Audio buttons.

Figure 3-53 — System reset

Selecting the RS-232/RS-422 protocol and baud rate

The switcher can support either RS-232 or RS-422 serial communication protocol, and operate at 9600, 19200, 38400, and 115200 baud rates. The settings of these variables can be viewed and changed from the front panel.

View and configure the switcher's serial communications settings as follows:

1. To enter *Serial Port Configuration* mode, simultaneously press and **hold all** Control buttons (Enter, Preset, View, and Esc) (figure 3-54).

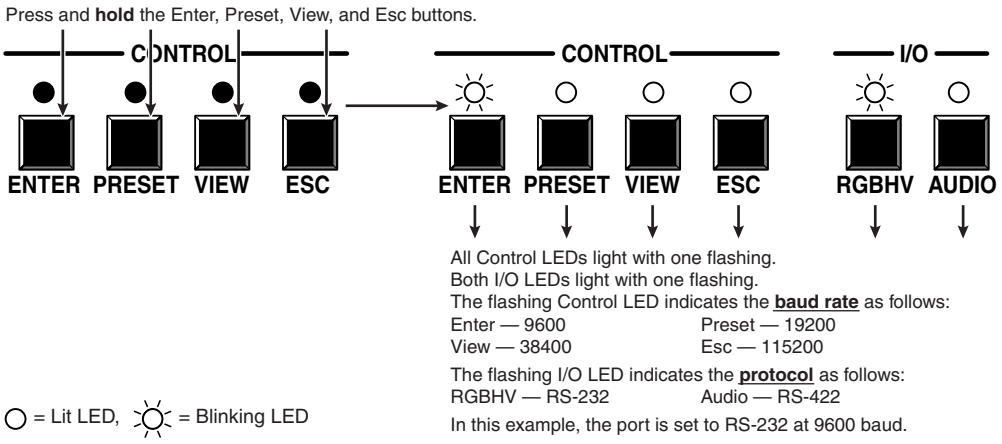

Press and **hold** the Enter, Preset, View, and Esc buttons.
CONTROL
ENTER PRESET VIEW ESC
CONTROL
ENTER PRESET VIEW ESC
I/O
RGBHV AUDIO
All Control LEDs light with one flashing.
Both I/O LEDs light with one flashing.
The flashing Control LED indicates the **baud rate** as follows:
Enter — 9600
Preset — 19200
View — 38400
Esc — 115200
The flashing I/O LED indicates the **protocol** as follows:
RGBHV — RS-232
Audio — RS-422
In this example, the port is set to RS-232 at 9600 baud.
= Lit LED, = Blinking LED

Figure 3-54 — RS-232/RS-422 and baud rate display

2. Release the Control buttons.
3. **To change a value**, press and release the button that relates to the desired value (figure 3-55).

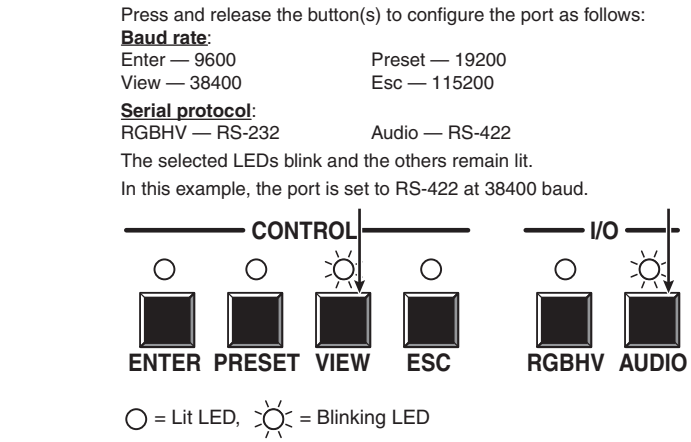

Press and release the button(s) to configure the port as follows:
Baud rate:
Enter — 9600
Preset — 19200
View — 38400
Esc — 115200
Serial protocol:
RGBHV — RS-232
Audio — RS-422
The selected LEDs blink and the others remain lit.
In this example, the port is set to RS-422 at 38400 baud.
CONTROL
I/O
ENTER PRESET VIEW ESC
RGBHV AUDIO
= Lit LED, = Blinking LED

Figure 3-55 — RS-232/RS-422 and baud rate selection

4. Press and release an input or output button to exit the *Serial Port Configuration* mode (figure 3-56).

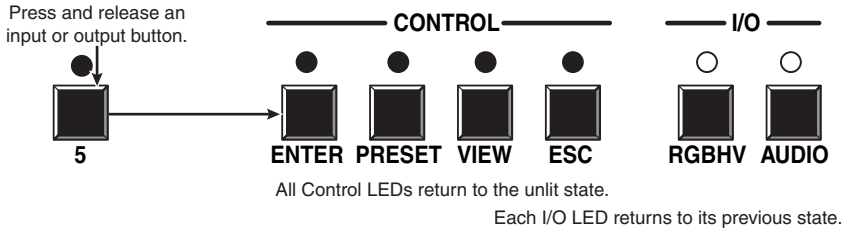


Figure 3-56 — Exit* Serial Port Configuration *mode

NOTE *The switcher requires some time to save the new serial port settings. Wait at least 5 minutes before removing power from the switcher or the settings may be lost.*

Rear Panel Operations

The rear panel has a Reset button that initiates two levels of matrix switcher resets. Press and hold the button while the switcher is running or while you apply power to the switcher for different reset levels.

Performing an absolute system reset from the rear panel

This function is identical to the front panel system reset (see *Performing a system reset from the front panel* on page 3-32) without requiring you to power down the switcher. This function is also identical to the Esc ZQQQ← SIS command, see chapter 4, *Programmer's Guide*). A system reset:

- Clears all ties and presets
- Clears all video and audio mutes
- Sets all input audio levels to unity gain (+0 dB)
- Sets all output volume levels to 100% (0 dB of attenuation)

NOTE *System reset does not replace any user-installed firmware.*

Perform a system reset as follows:

1. Use an Extron Tweeker to press and **hold** the Reset button until the rear panel Reset LED blinks three times (approximately 9 seconds) (figure 3-57).

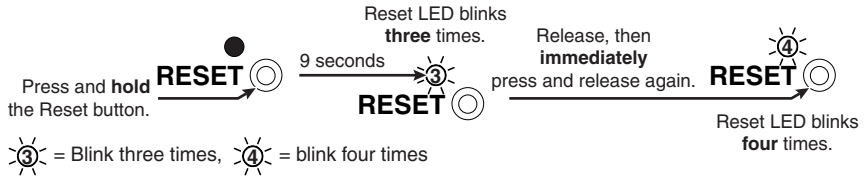

Reset LED blinks **three** times.
Release, then **immediately** press and release again.
Press and **hold** the Reset button.
RESET
9 seconds
RESET
RESET
Reset LED blinks **four** times.
③ = Blink three times, ④ = blink four times

Figure 3-57 — System reset

2. Release the Reset button and then immediately press and release the Reset button again. **The reset does not occur** if the second momentary press does not occur within 1 second.

Performing a hard reset from the rear panel

The hard reset function restores the switcher to the original factory default settings. All user files and settings are maintained. Perform a hard reset as follows:

1. If necessary, turn off power to the switcher.
2. Press and **hold** the Reset button on the rear panel **while** you apply AC power to the switcher (figure 3-58).

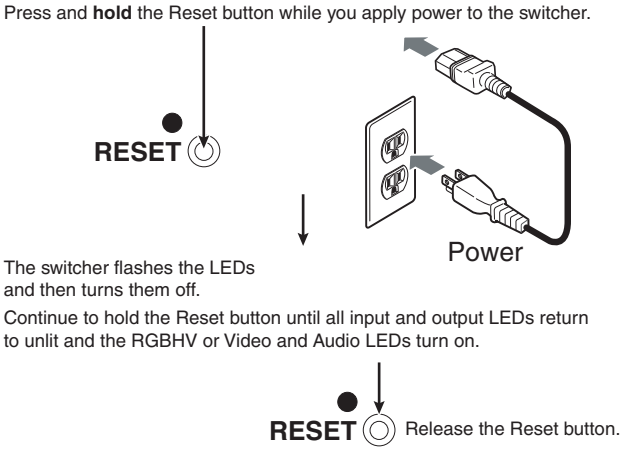

Press and **hold** the Reset button while you apply power to the switcher.
RESET
Power
The switcher flashes the LEDs and then turns them off.
Continue to hold the Reset button until all input and output LEDs return to unlit and the RGBHV or Video and Audio LEDs turn on.
RESET
Release the Reset button.

Figure 3-58 — Hard reset

NOTE *A hard reset returns the switcher to the default (factory) firmware configuration. The switcher continues to operate using this firmware until you either cycle power, in which case the switcher begins to use the most-recently installed firmware update, or install a new firmware update.*

Optimizing the Audio

Each individual input audio level can be adjusted within a range of -18 dB to +24 dB, so there are no noticeable volume differences between sources and for the best headroom and signal-to-noise ratio. Adjust the audio gain and attenuation as follows:

1. Connect audio sources to all desired inputs and connect the audio outputs to output devices such as audio players. See *Audio connections*, in chapter 2, *Installation*. For best results, wire all of the inputs and the outputs as balanced.
2. Power on the audio sources, the switcher, and the audio players.
3. Switch among the inputs (see *Creating a configuration*, on page 3-8), listening to the audio with a critical ear or measuring the output audio level with test equipment, such as a VU meter.
4. As necessary, adjust the input audio level of each input (see *Viewing and adjusting the input audio level*, on page 3-24) so that the approximate output level is the same for all selected inputs.
5. As necessary, adjust the output audio level of each input (see *Viewing and adjusting the output volume*, on page 3-28).

Troubleshooting

This section gives recommendations on what to do if you have problems operating the switcher and describes an actual image problem that Extron has encountered.

1. Ensure that all devices are plugged in and powered on. The switcher is receiving power if one of the front panel I/O LEDs is lit.
2. Check to see if one or more outputs are muted.
3. Ensure an active input is selected for output on the switcher.
4. Ensure that the proper signal format is supplied.
5. Check the cabling and make corrections as necessary.
6. Call the Extron S³ Sales & Technical Support Hotline if necessary.

Configuration Worksheets

Rather than trying to remember the configuration for each preset, use worksheets to record this information. Make copies of the blank worksheet on page 3-39 and use one for each preset configuration. Cross out all unused or inactive inputs and outputs. Use different colors for video and audio.

Worksheet example 1: System equipment

Figure 3-59 shows a worksheet for an MVX 128 A in a fictional organization with the system hardware annotated. Inputs 10 and 11 have no connection in this organization, so they have been crossed out on the worksheet.

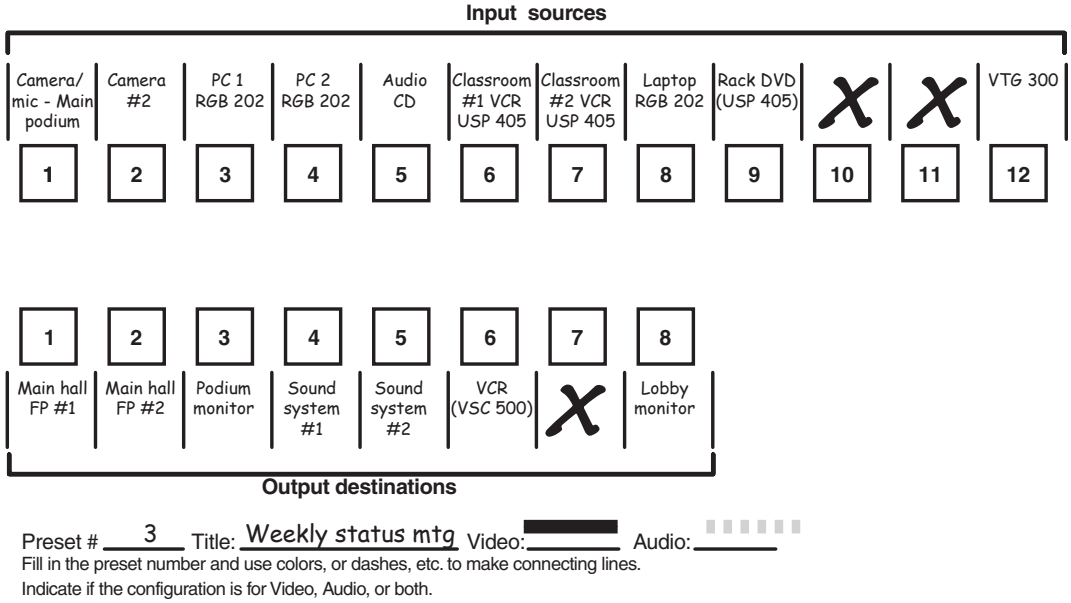


Figure 3-59 — Worksheet example 1: System equipment

Inputs include PCs, an audio CD player, cameras, and an Extron VTG 300. Output devices include monitors, front and rear projectors, a stereo, and a VCR for recording presentations.

The VTG 300 video test generator connected to input 12 enables a video test pattern to be sent to one, several, or all output devices for problem isolation or adjustment purposes. An audio test tape or CD could be used in a similar manner to check out the audio components.

Worksheet example 2: Daily configuration

Figure 3-60 continues from worksheet example 1 by showing the video and audio ties that make up the configuration of preset 1. Solid ink lines show video ties and dashed pencil lines show the audio ties.

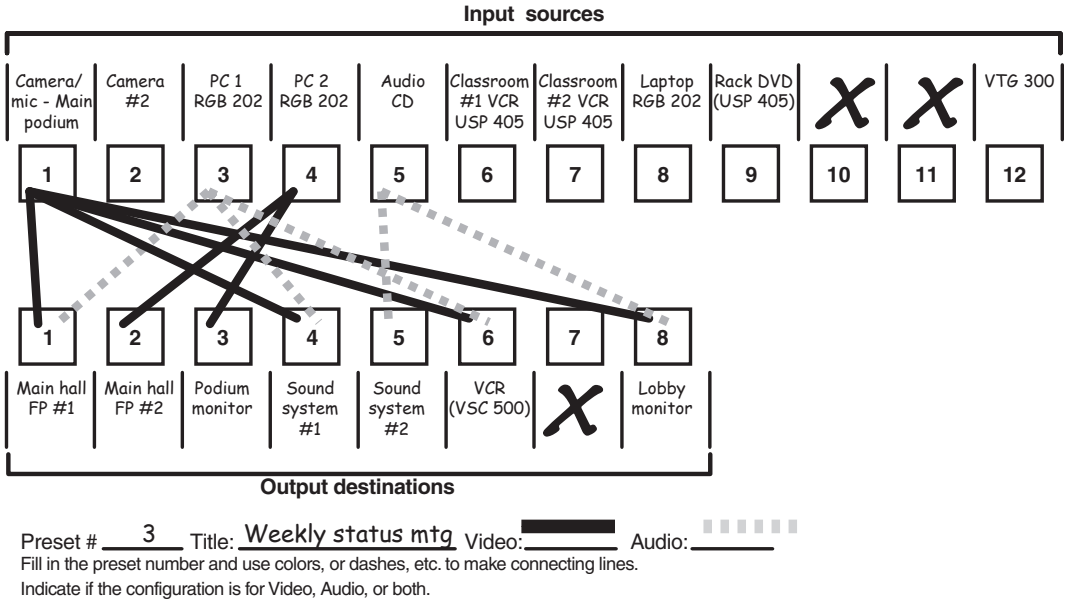


Figure 3-60 — Worksheet example 2: Daily configuration

In this example:

- The image of the presenter, from the main podium camera (input 1), is:
  - Displayed in the main hall (output 1)
  - Displayed in the conference room (output 4) to the overflow crowd
  - Displayed in the lobby (output 8)
  - Tied to the VCR (output 6)
- The presenter has a presentation on her laptop computer (input 4) that is:
  - Displayed in the main hall (output 2)
  - Displayed locally on the podium (output 3)
- The audio from her microphone (input 3) is:
  - Played in the hall (output 1)
  - Played in the conference room (output 4)
  - Sent to the VCR (output 6)
- Classical music from the CD player (input 5) is:
  - Played in the background in the main hall on sound system #2 (output 5)
  - Played in the lobby (output 8)

Worksheet example 3: Test configuration

The A/V system in our fictional organization needs to be fine tuned on a regular basis. Figure 3-61 shows a typical test configuration, with an Extron video test generator (input 12) generating a test pattern to all monitors (outputs 1, 2, 3, 4, and 8). Sound checks are run from the CD player (input 5) to all audio systems (outputs 1, 2, 3, 4, and 8).

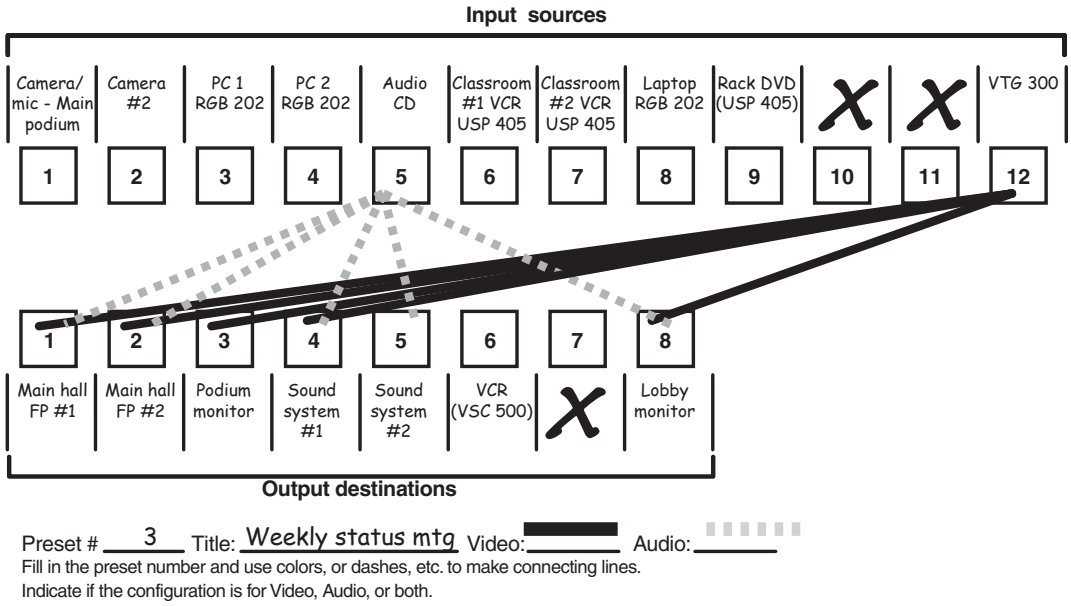
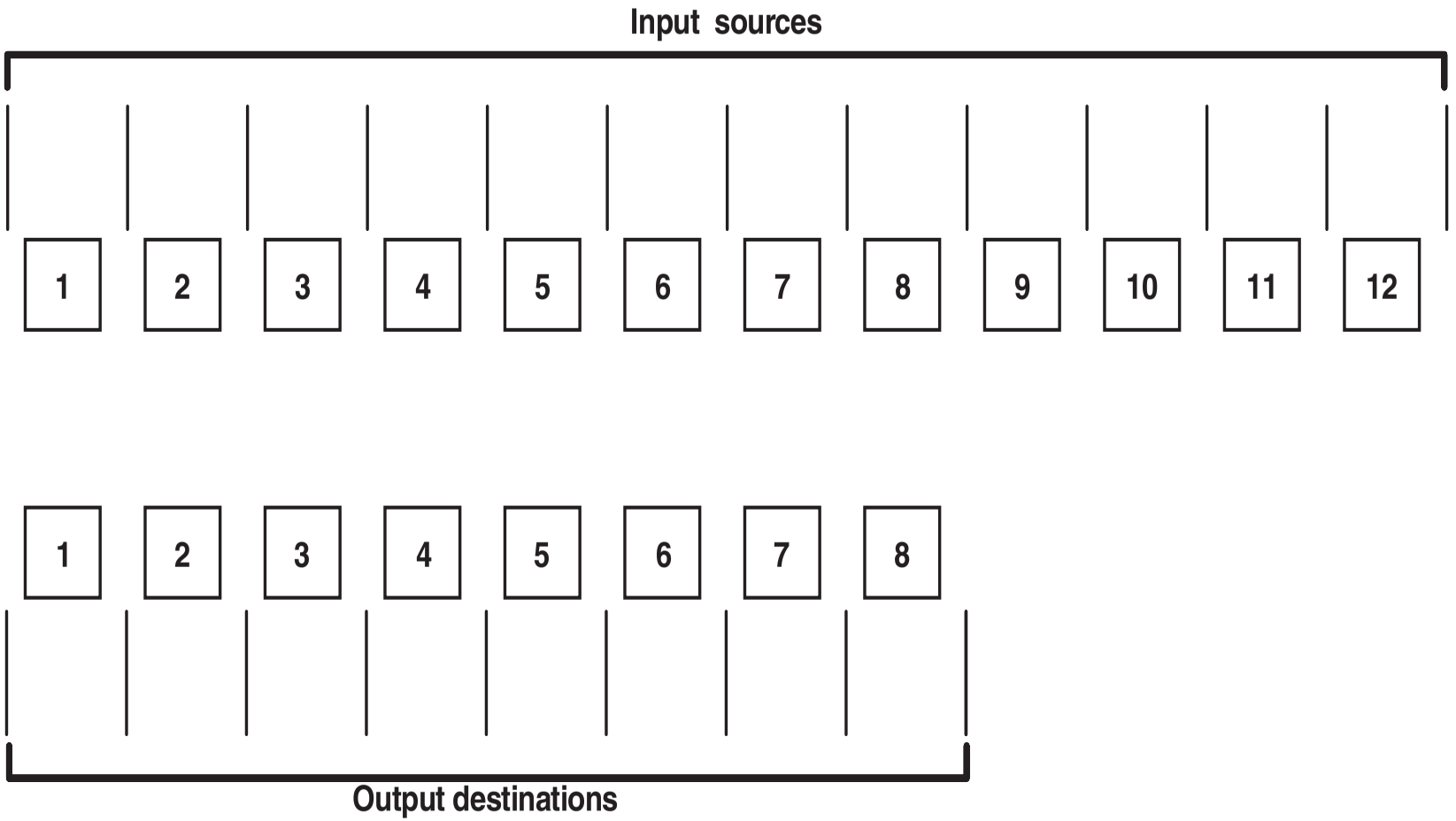


Figure 3-61 — Worksheet example 3: Test configuration



Preset # _____ Title: _____ Video: _____ Audio: _____

Fill in the preset number and use colors, or dashes, etc. to make connecting lines.

Indicate if the configuration is for video, audio, or both.

Configuration worksheet

4

Chapter Four

Programmer's Guide

Host-to-Switcher Instructions

Switcher-Initiated Messages

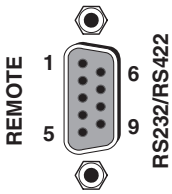
Switcher Error Responses

Using the Command/Response Tables

Command/Response Table for SIS Commands

Special Characters

The switcher's rear panel Remote 9-pin D female connector (figure 4-1) can be connected to the RS-232 or RS-422 serial port output of a host device such as a computer running the HyperTerminal utility, an RS-232 capable PDA, or a control system. This connection makes software control of the switcher possible.



Pin	RS-232	Function	RS-422	Function
1	—	Not used	—	Not used
2	TX	Transmit data	TX–	Transmit data (–)
3	RX	Receive data	RX–	Receive data (–)
4	—	Not used	—	Not used
5	Gnd	Signal ground	Gnd	Signal ground
6	—	Not used	—	Not used
7	—	Not used	RX+	Receive data (+)
8	—	Not used	TX+	Transmit data (+)
9	—	Not used	—	Not used

Figure 4-1 — Remote connector pin assignments

The default protocol is as follows:

- 9600 baud
- 1 stop bit
- no parity
- no flow control
- 8-bit

NOTE *The MVX 128 A switcher can support either RS-232 or RS-422 serial communication protocol, and can operate at 9600, 19200, 38400, or 115200 baud rates. See* Selecting the RS-232/RS-422 protocol and baud rate *on page 3-33,* Operation, *to configure the RS-232/RS-422 port from the front panel.*

Host-to-Switcher Instructions

The switcher accepts SIS (Simple Instruction Set) commands through the RS-232/RS-422 port. SIS commands consist of one or more characters per command field. They do not require any special characters to begin or end the command character sequence. Each switcher response to an SIS command ends with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Switcher-Initiated Messages

When a local event such as a front panel operation occurs, the switcher responds by sending a message to the host. The switcher-initiated messages are listed below (underlined).

(C) Copyright 2005, Extron Electronics CP 300 450 MAV IP, Vx.xx, 60-799-01↵

The switcher initiates the copyright message when it is first powered on. Vx.xx is the firmware version number.

Qik↵

The switcher initiates the Qik message when a front panel switching or preset recall operation has occurred.

Spr*nn*↵

The switcher initiates the Spr message when a memory preset has been saved from the front panel. "*nn*" is the preset number.

In*nn* Aud*xx*↵

The switcher initiates the Aud message when a front panel input audio level change has occurred. "*nn*" is the input number and "*xx*" is the dB level.

Out*nn* Vol*xx*↵

The switcher initiates the Vol message when a front panel output audio volume change has occurred. "*nn*" is the output number and "*xx*" is the volume level.

Vmt*nn***x*↵

The switcher initiates the Vmt message when a video output mute is toggled on or off from the front panel. "*nn*" is the output number and "*x*" is the mute status: 1 = on, 0 = off.

Amt*nn***x*↵

The switcher initiates the Amt message when an audio output mute is toggled on or off from the front panel. "*nn*" is the output number and "*x*" is the mute status: 1 = on, 0 = off.

Exe*n*↵

The switcher initiates the Exe message when executive mode is toggled on or off from the front panel. "*n*" is the executive mode status: 1 = on, 0 = off.

Switcher Error Responses

When the switcher receives an SIS command and determines that it is valid, it performs the command and sends a response to the host device. If the switcher is unable to perform the command because the command is invalid or contains invalid parameters, the switcher returns an error response to the host. The error response codes are:

E01 — Invalid input channel number (too large)
E10 — Invalid command
E11 — Invalid preset number (too large)
E12 — Invalid output number (too large)
E13 — Invalid value (out of range)
E14 — Illegal command for this configuration
E17 — Timeout (caused only by direct write of global presets)
E22 — Busy

Using the Command/Response Tables

The command/response tables begin on page 4-5. Lower-case letters are acceptable in the command field except where indicated for the gain and attenuation commands. The table below shows the hexadecimal equivalent of each ASCII character used in the command/response table.

ASCII to HEX Conversion Table																Esc 1B		CR ØD		LF ØA	
Space	2Ø	!	21	"	22	#	23	$	24	%	25	&	26	'	27						
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F						
Ø	3Ø	1	31	2	32	3	33	4	34	5	35	6	36	7	37						
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F						
@	4Ø	A	41	B	42	C	43	D	44	E	45	F	46	G	47						
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F						
P	5Ø	Q	51	R	52	S	53	T	54	U	55	V	56	W	57						
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F						
`	6Ø	a	61	b	62	c	63	d	64	e	65	f	66	g	67						
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F						
p	7Ø	q	71	r	72	s	73	t	74	u	75	v	76	w	77						
x	78	y	79	z	7A	{	7B	I	7C	}	7D	~	7E	DEL	7F						

Symbols are used throughout the table to represent variables in the command/response fields. Command and response examples are shown throughout the table.

Command/Response Table for SIS Commands

Symbol definitions

↵	= CR/LF (carriage return/line feed) (hex 0D 0A)	
←	= Carriage return (no line feed, hex 0D))	
•	= Space character	
Esc	= Escape key (hex 1B)	
X1	= Input number	01 – 12
X2	= Input number (for tie)	00 – 12 (00 = untied)
X3	= Output number	01 – 08
X4	= Numeric dB value	–18 to +24 (45 steps of gain or attenuation)
X5	= Audio gain	0 – 24 (1 dB/step)
X6	= Audio attenuation	1 – 18 (1 dB/step)
X7	= Volume adjustment range	0 – 64 (1 dB/step except for 0-to-1, which is 34 dB) (see the table on page 4-9)
X8	= Mute, executive mode, power supply	(0 = off/not OK, 1 = on/OK)
X9	= Global preset #	32 maximum (0 = current configuration)
X10	= Video/audio mute:	0 = no mutes 1 = video mute 2 = audio mute 3 = video and audio mute
X11	= Firmware version number to second decimal place (*x.xx*)	
X12	= Verbose firmware version-description-upload date/time. See page 4-11.	
X13	= Name	12 characters maximum for global and room preset names 11 characters maximum for room names Upper- and lower-case alphanumeric characters and _ : = / and spaces are valid.
NOTE	*The following characters are invalid in the name: {space} ~ , @ = ' [ ] { } < > ' " ; : | \ and ?.*	
X14	= Baud rate	9600, 19200, 38400, 115200
X15	= Parity	**O**dd, **e**ven, **n**one, **m**ark, **s**pace (only the first letter is required)
X16	= Data bits	7, 8
X17	= Stop bits	1, 2
X18	= Port type	0 = RS-232, 1 = RS-422
X19	= Voltage	Positive or negative voltage and magnitude
X20	= Temperature	Degrees Fahrenheit

Command/response table for SIS commands

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Create ties			
NOTE • *Commands can be entered back-to-back, with no spaces. For example: 1*1!02*02&003*003%4*8$.* • *The quick multiple tie and tie input to all output commands activate all I/O switches simultaneously.* • *The matrix switchers support 1-, 2-, and 3-digit numeric entries (1*1, 02*02, or 001*001).*			
Tie input X2 to output X3, video (V) and audio (A)	X2*X3!	OutX3•InX2•All↵	Tie input X2's video and audio to output X3.
Example:	1*3!	Out03•In01•All↵	Tie input 1 video and audio to output 3.
Tie input X2 to output X3, RGBHV only	X2*X3&	OutX3•InX2•RGB↵	Audio breakaway.
Example (see Note):	10*4&	Out04•In10•RGB↵	Tie input 10 RGB to output 4.
Tie input X2 to output X3, video only	X2*X3%	OutX3•InX2•Vid↵	Audio breakaway.
Example (see Note):	7*5%	Out05•In07•Vid↵	Tie input 7 video to output 5.
NOTE *The & tie command for RGB and the % tie command for video can be used interchangeably on the matrix switchers.*			
Tie input X2 to output X3, audio only	X2*X3$	OutX3•InX2•Aud↵	Audio breakaway.
Example:	12*4$	Out04•In12•Aud↵	Tie input 12 video to output 4.
Quick multiple tie	Esc+QX2*X3!...X2*X3$←	Qik↵	
Example:	Esc+Q3*4!3*5%3*6$←	Qik↵	Tie input 3 video and audio to output 4, tie input 3 video to output 5, and tie input 3 video to output 6.
Tie input to all outputs, V & A	X2*!	InX2•All↵	Audio breakaway.
Example:	5*!	In05•All↵	Tie input 5 video and audio to all outputs.
Tie input to all outputs, RGBHV only	X2*&	InX2•RGB↵	Audio breakaway.
Example (see Note):	8*&	In08•RGB↵	Tie input 8 video to all outputs.
Tie input to all outputs, video only	X2*%	InX2•Vid↵	Audio breakaway.
Example (see Note):	10*%	In10•Vid↵	Tie input 10 video to all outputs.
NOTE *The & tie all command for RGB and the % tie all command for video can be used interchangeably on the matrix switchers.*			
Tie input to all outputs, audio only	X2*$	InX2•Aud↵	Audio breakaway.
Read ties			
NOTE *The & read tie command for RGB and the % read tie command for video can be used interchangeably on the matrix switchers.*			
Read RGB output tie	X3&	X2↵	RGBHV input X2 tied to output X3.
Read video output tie	X3%	X2↵	Video input X2 tied to output X3.
Read audio output tie	X3$	X2↵	Audio input X2 tied to output X3.

Command/response table for SIS commands (continued)

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Video mute commands			
RGB mute	X3*1B	Vmt X3 *1 ↵	Mute output X3 RGB (video off).
RGB unmute	X3*0B	Vmt X3 *0 ↵	Unmute output X3 RGB (video on).
Read RGB mute	X3B	X8 ↵	1 = mute on, 0 = mute off.
Global RGB mute	1*B	Vmt1 ↵	Mute all RGB outputs.
Global RGB unmute	0*B	Vmt0 ↵	Unmute all RGB outputs.
Audio input gain and attenuation			
NOTE *The set gain (**G**) and set attenuation (**g**) commands **are** case sensitive.*			
Set input audio gain to +dB value	X1*X5G	In X1 • Aud X4 ↵	
Example:	1*2G	In01•Aud+02 ↵	Set input 1 audio gain to +2 dB.
Set input audio attenuation to -dB value	X1*X5g	In X1 • Aud X4 ↵	
Increment gain	X1+G	In X1 • Aud X4 ↵	Increase gain by 1 dB.
Example:	5+G	In05•Aud+03 ↵	Audio input 5 level incremented from +2 dB to +3 dB.
Decrement gain	X1-G	In X1 • Aud X4 ↵	Decrease gain by 1 dB.
Example:	7-G	In07•Aud-09 ↵	Audio input 7 level decremented from -8 dB to -9 dB.
Read input gain	X1G	X4 ↵	
Audio output volume			
NOTE *The table on page 4-7 defines the value of each audio volume step.*			
Set the audio volume to a specific value	X3*X7V	Out X3 • Vol X7 ↵	
Example:	1*50v	Out01•Vol50 ↵	Set output 1 volume to 79%.
Increment volume	X3+V	Out X3 • Vol X7 ↵	Increment volume by 1 step.
Example:	1+V	Out01•Vol51 ↵	
Decrement volume	X3-V	Out X3 • Vol X7 ↵	Decrease volume by 1 step.
Read output volume	X3V	X7 ↵	
Audio mute commands			
Audio mute	X3*1Z	Amt X3 *1 ↵	Mute output X3 audio (audio off).
Audio unmute	X3*0Z	Amt X3 *0 ↵	Unmute output X3 audio (audio on).
Read audio mute	X3Z	X8 ↵	1 = mute on, 0 = mute off.
Global audio mute	1*Z	Amt1 ↵	Mute all audio outputs.
Global audio unmute	0*Z	Amt0 ↵	Unmute all audio outputs.

Audio volume adjustment settings

X7 value	dB of attenuation	Output volume	X7 value	dB of attenuation	Output volume	X7 value	dB of attenuation	Output volume
00	98	0%						
01	63	5.5%	23	41	38.5%	45	19	71.5%
02	62	7%	24	40	40%	46	18	73%
03	61	8.5%	25	39	41.5%	47	17	74.5%
04	60	10%	26	38	43%	48	16	76%
05	59	11.5%	27	37	44.5%	49	15	77.5%
06	58	13%	28	36	46%	50	14	79%
07	57	14.5%	29	35	47.5%	51	13	80.5%
08	56	16%	30	34	49%	52	12	82%
09	55	17.5%	31	33	50.5%	53	11	83.5%
10	54	19%	32	32	52%	54	10	85%
11	53	20.5%	33	31	53.5%	55	9	86.5%
12	52	22%	34	30	55%	56	8	88%
13	51	23.5%	35	29	56.5%	57	7	89.5%
14	50	25%	36	28	58%	58	6	91%
15	49	26.5%	37	27	59.5%	59	5	92.5%
16	48	28%	38	26	61%	60	4	94%
17	47	29.5%	39	25	62.5%	61	3	95.5%
18	46	31%	40	24	64%	62	2	97%
19	45	32.5%	41	23	65.5%	63	1	98.5%
20	44	34%	42	22	67%	64	0	100%
21	43	35.5%	43	21	68.5%			
22	42	37%	44	20	70%			

Command/response table for SIS commands (continued)

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Names			
Write global preset name	Esc X9,X13NG←	NmgX9,X22↵	
Example:	Esc1,Security 1NG←	Nmg01,Security 1↵	Name global preset 1 "Security 1".
Read global preset name	Esc X9NG←	X13↵	
Example:	Esc2NG←	Security 2↵	
NOTE	• *If a preset is unassigned, the* X23 *displays* [unassigned].		
	• *If a global preset is saved, but not yet named, the default name is* Preset X11.		
Write input name	Esc X1,X13NI←	NmiX1,X13↵	
Example:	Esc1,Podium camNI←	Nmi01,Podium cam↵	Name input 1 "Podium cam".
Read input name	Esc X1NI←	X13↵	
Write output name	Esc X1,X13NO←	NmoX1,X13←	
Example:	Esc1,Main PJ1NO←	Nmo01,Main PJ1↵	Name output 1 "Main PJ1".
Read output name	Esc X1NO←	X13↵	
Save, recall, and directly write presets			
NOTE	• *If you try to recall a preset that is not saved, the matrix switcher responds with the error code* E11.		
	• *If a room is not defined (does not exist in the switcher), the matrix switcher responds with the error code* E21.		
	• *The following characters are invalid in preset names:* + - , ` @ = [ ] { } ' " ; : | \ and ?.		
Save current configuration as a global preset	X9,	SprX9↵	Command character is a comma.
Example:	9,	Spr9↵	Save current ties as preset 9.
Recall a global preset	X9.	RprX9↵	Command character is a period.
Example:	5.	Rpr05↵	Recall preset 5, which becomes the current configuration.
Direct write process —			
NOTE	*The* direct **write** of a global preset *should always be preceded by a* **clear** global preset ties *command of that same preset number, as shown below. In a directly-written preset, each output position's tied input (or no tied input) remains unchanged unless overwritten or cleared.*		
	If you do not ***clear*** *the ties in a global preset number before you directly* ***write*** *a global preset to that number, ties that are part of the previous version of the specified preset with the same number can unexpectedly become part of the newly-created preset.*		
Clear a global preset's ties	Esc+X9P0*!←	SprX9↵	Clear all ties in preset X9.
Directly write a global preset	Esc+X9PX2*X3!X2*X3%X2*X3$ ... X2*X3&←	SprX9↵	The tie all (!), tie RGBHV (&), tie video (%), and tie audio ($) commands are all valid.
Example:	Esc+27P0*!←	Spr27↵	Clear all ties in preset 27.
	Esc+27P12*5!10*09%3*2$3*8&←	Spr27↵	Brackets are shown to separate ties for clarity only. Create global preset 27, which ties video and audio input 12 to output 5, RGBHV input 10 to output 9, video input 3 to output 2, and audio input 3 to output 8.
Executive mode			
Lock front panel	1X	Exe1↵	Enable executive mode.
Unlock front panel	0X	Exe0↵	Disable executive mode.
View lock status	X	X8↵	

Command/response table for SIS commands (continued)

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Resets			
Reset global presets and names	Esc ZG ←	Zpg ↵	Clear all global presets and their names.
Reset **one** global preset	Esc X9 ZG ←	Zpg X9 ↵	Clear global preset X9.
Reset audio input levels	Esc ZA ←	Zpa ↵	Rest all audio input levels (gain and attenuation) to 0 dB.
Rest audio output levels	Esc ZV ←	Zpv ↵	Reset all audio output levels (volume) to 100% (no attenuation).
Reset all mutes	Esc ZZ ←	Zpz ↵	Reset all video and audio mutes.
Reset flash	Esc ZFFF ←	Zpf ↵	Reset flash memory (erase all user-supplied files).
Reset whole switcher	Esc ZXXX ←	Zpx ↵	Clear all ties and presets, reset all audio gains to 0 dB, and reset volume to 100%.
Absolute reset	Esc ZQQQ ←	Zpq ↵	Similar to **Reset whole switcher**, plus clear the IP address to 192.168.254.254 and subnet mask to 255.255.000.000.
View ties, gain, volume, mutes, and presets			
View RGBHV output tie	X3 &	X2 ↵	
Example:	5&	12 ↵	Input 12 RGBHV is tied to output 5.
View video output tie	X3 %	X2 ↵	
Example:	7%	02 ↵	Input 2 video is tied to output 7.
View audio output tie	X3 $	X2 ↵	
Example:	3$	06 ↵	Input 6 audio is tied to output 3.
View input gain	X2 G	X4 ↵	
Example:	4G	-02 ↵	Gain for input 4 is -2 dB.
View output volume	X2 V	X7 ↵	
Example:	7V	55 ↵	Volume for output 7 is 55%.
View output mutes	Esc VM ←	X10[1], X10[2], ... X10[8]Mut ↵	Each X10 response is the mute status of an output, starting from output 1.
Example:	Esc VM ←	02301000Mut ↵	Output 2 audio is muted, output 3 video and audio are muted, and output 5 video is muted. All other outputs are unmuted.

Command/response table for SIS commands (continued)

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
View ties, gain, volume, mutes, and presets (continued)			
View video global preset configuration	Esc X9 *1*1VC ↵	X2[1] • X2[2] • ... • X2[16] • Vid ↵	Show preset X9's video configuration. Show the input tied to 16 sequential outputs (12 are present on this model), starting from output 1.
Command description:	preset #*starting output # (O# - should always be *1*)**1*(=video)*VC*		
Response description:	input # (I#) tied to O#1 • I# tied to O#2 • I# tied to O#3 • ... • I# tied to O#12 • *Vid* ↵		
Example:	Response = tied input: 08 • 08 • 12 • 08 • 08 • 11 • 00 • 00 • -- • -- • -- • -- • -- • -- • -- • -- • Vid ↵ Output: 1 2 3 4 5 6 7 8 09 10 11 12 13 14 15 16 (input 12 tied to output 3; input 8 tied to output 4; no tied input; outputs do not exist) Each position shown in the response is an output: left = output 1, right = output 16. (Outputs 9 through 16 are not present on the MVX 128 A.) The number in each position is the input tied to that output. In this example, video input 8 is tied to outputs 1, 2, 4, and 5; input 12 is tied to output 3; and input 11 is tied to output 6. No inputs are tied to outputs 7 and 8.		
View audio global preset configuration	Esc X9 *1*2VC ↵	X2[1] • X2[2] • ... • X2[16] • Aud ↵	Show preset X9's audio configuration. Show the input tied to 16 sequential outputs (12 are present on this model), starting from output 1.
Command description:	preset #*starting output # (O# - should always be *1*)**2*(=audio)*VC*		
Response description:	input # (I#) tied to O#1 • I# tied to O#2 • I# tied to O#3 • ... • I# tied to O#12 • *Aud* ↵		
Example:	Response = tied input: 01 • 01 • 01 • 01 • 02 • 12 • 12 • 00 • -- • -- • -- • -- • -- • -- • -- • -- • Aud ↵ Output: 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 (input 1 tied to output 3; no tied input; outputs do not exist) Each position shown in the response is an output: left = output 1, right = output 16. (Outputs 9 through 16 are not present on the MVX 128 A.) The number in each position is the input tied to that output. In this example, audio input 1 is tied to outputs 1, 2, 3, and 4; input 2 is tied to output 5, input 12 is tied to outputs 6 and 7. No input is tied to output 8.		
Serial port configuration			
Read port parameters	Esc 1CP ↵	X14, X15, X16, X17 ↵	
Set mode	Esc 1* X18 CY ↵	Cpn1 • Cty X18 ↵	
Read mode	Esc 1CY ↵	X18 ↵	

Command/response table for SIS commands (continued)

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Information requests			
Information request	I	V12X08•A12X08↵	
Request part number	N	60-799-01↵	
NOTE *There are two separate sets of Extron firmware that the switcher can report on: the controller firmware, which is the overall control firmware; and the latest optional Extron firmware update, which is available at www.Extron.com.*			
Query controller firmware version	Q	X11↵	
Example:	Q	1.23↵	The factory-installed controller firmware version is 1.23 (sample value only).
Query controller firmware version (verbose)	0Q	X11-X12-X12↵	Provide a detailed status of the MVX 128 controller firmware and any firmware upgrade. The firmware that is running is marked by an asterisk (*). A caret (^) indicates that the firmware has a bad checksum or an invalid load. ?.?? indicates that firmware is not loaded.
Response description:	Controller firmware version-updated firmware version↵		
Example:	0q		

Description | * indicates the version running | Upload date and time

Response: *n.nn*-1.00(1.06-16x16 Series -Wed, 22 Feb 2006 00:00:00 GMT)-1.00*(1.06-16x16 Series -Thu, 16 Mar 2006 16:39:21 GMT)↵

Meaningless data for this switcher model | MVX 128 firmware version | Updated firmware version

Request system status	S	X19•X19•X19•X19•X19•X20↵	
Response description:	*+3.3V•+5V•-5V•+15V•-15V•temperature (degrees fahrenheit)*↵		
Example:			

-15V power system at -15.15V

3.29•5.04•-5.14•15.27•-15.15•120.20↵

3.3V power system at 3.29V | Temperature 120.20 degrees

5

Chapter Five

Matrix Software

Matrix Switchers Control Program

Button Label Generator Program

Matrix Software

Two software programs accompany the MVX 128 A switcher:

- The Extron Matrix Switcher Control Program, which communicates with the switcher via the RS-232/RS-422 port, provides an easy way to set up ties and sets of ties.
- The Extron Button-Label Generator, which allows you to design and print labels for the MVX 128 A front panel buttons.

Both programs are compatible with Windows 95/98, Windows NT, Windows ME, Windows 2000, and Windows XP. Updates to these programs can be downloaded from the Extron Web site (http://www.extron.com).

Matrix Switchers Control Program

Installing the software

The program is contained on a CD-ROM and available on the Extron Web site: www.extron.com. Load and run the program from the hard drive.

To install the program from the CD-ROM to the hard drive, run Setup.exe from the CD-ROM and follow the instructions that appear on the screen. The program occupies approximately 1 MB (megabyte) of hard-drive space.

By default, the Windows installation creates a C:\MTRX50 directory and places two icons (MATRIX Switcher+ Control Program and MATRIX Switcher+ Help) into a group or folder named "Extron Electronics".

NOTE *The program was designed to control most Extron matrix switchers, but its operation is limited to the features and configuration of your switcher.*

NOTE *The MVX 128 A switcher can support either RS-232 or RS-422 serial communication protocol, and operate at 9600, 19200, 38400, or 115200 baud rates. See* Selecting the RS-232/RS-422 protocol and baud rate *on page 3-33, to configure the RS-232/RS-422 port from the front panel.*

Using the software

Many items found in the Matrix Switcher Control Program are also accessible via front panel controls (see chapter 3, *Operation*) and under SIS control (see chapter 4, *Programmer's Guide*). The Matrix Switcher+ Help Program provides information on settings and on how to use the control program itself.

1. To run the Matrix Switcher Control Program, double-click on the Matrix Switcher Control Program icon (shown at right) in the Extron Electronics group or folder.

The Comm Port Selection window (figure 5-1) appears.

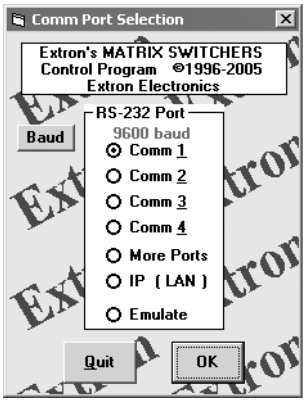


Figure 5-1 — Comm port selection window

2. Choose either the comm port that is connected to the MVX 128 A switcher's RS-232/RS-422 port or *Emulate*.

NOTE *Although IP [LAN] is available for selection, the switcher does not have an Ethernet port. Do not select IP [LAN].*

- **If you selected a comm port**, check the baud rate displayed in the comm port selection window. If you need to change the baud rate, click on the Baud button and double-click on the desired baud rate.

  Available rates are 9600, 19200, 38400, and 115200. The default is 9600.

NOTE *See* Selecting the RS-232/RS-422 protocol and baud rate *in chapter 3,* Operation *on page 3-33, to identify the selected baud rate from the front panel.*

  Click *OK* and proceed to step **3**.

- **If you selected *Emulate***, click *OK* and see *Using emulation mode* on page 5-10.

3. The Extron Matrix Switcher Control Program window (figure 5-2 and figure 5-3) appears. The window displays the current configuration of the attached matrix.

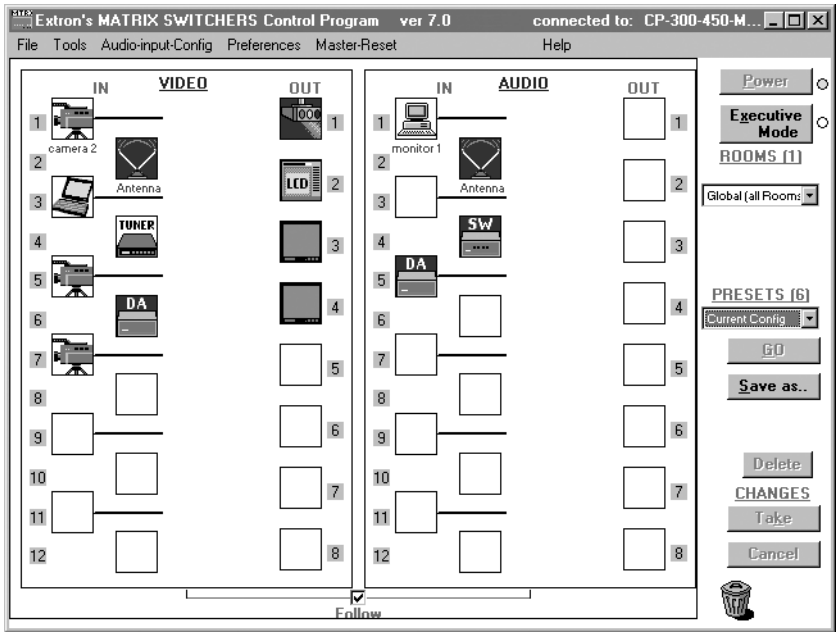


Figure 5-2 — Extron Matrix Switcher Control Program window (blank)

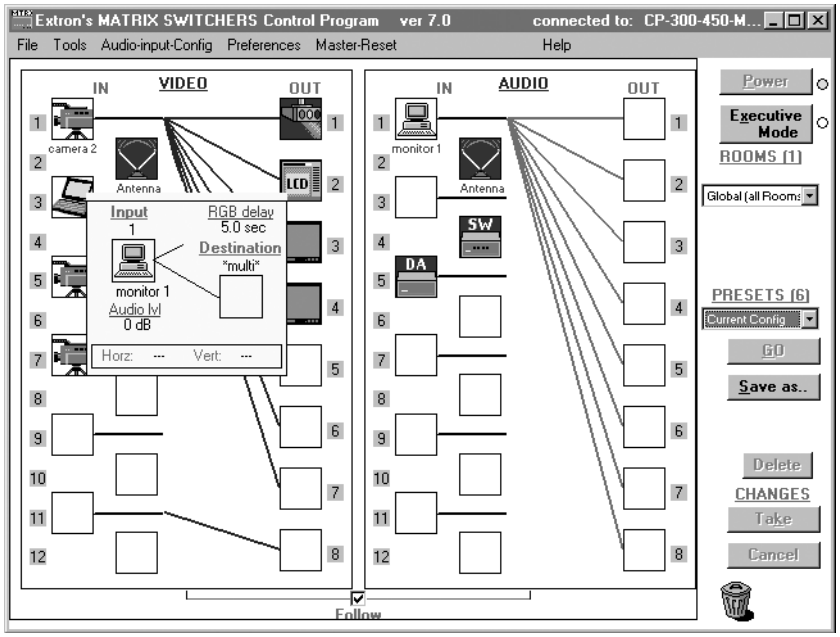


Figure 5-3 — Sample program window (complete)

- To set up audio in follow mode (audio and video have the same tie configuration), select the Follow box at the bottom of the window. To set up audio in breakaway mode (audio and video have different tie configurations), deselect the Follow box.
- To make the control program easier to use, assign a device icon to each input and output. Click on a box that represents an input or output, and drag the desired icon onto the box from the icon palette that appears.
- To create a tie, drag an input box to one or more output boxes. To remove a tie, drag the output box to its tied input box or to the trash can.
- For quick display of information on a specific input or output device, position the cursor over that device in the control program window. The program opens a window that details the connections to that device, the audio level, the RGB delay, and the frequency of the video signal input from or output to that device. See the inset box in figure 5-3.

Updating firmware

The firmware upgrade utility provides a way to replace the firmware that is coded on the switcher's control board without taking the switcher out of service and replacing the firmware IC chip.

Update the switcher firmware as follows:

1. Visit the Extron web site, www.extron.com, select the CrossPoint/MAV Plus product category, and select the latest firmware install package (*.exe file) for download. Note the folder to which you save the firmware file.
2. Run the executable (*.exe) file to decompress the firmware file.
3. Start the Matrix Switcher Control Program and connect to the MVX 128 A switcher. See *Using the software* in this chapter, steps **1** through **4**, starting on page 5-3.
4. Click *Tools* > *Update firmware*. The open file window appears (figure 5-4).

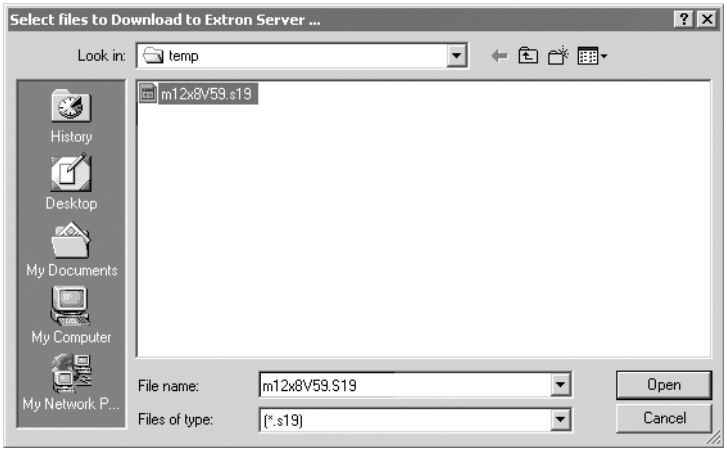


Figure 5-4 — Open file window

5. Navigate to the folder where you saved the firmware upgrade file. Select the file.

NOTE *Valid firmware files must have the file extension .S19. Any other file extension is not a firmware upgrade.*

NOTE *The original factory-installed firmware is permanently available on the MVX 128 A switcher. If the attempted firmware upload fails for any reason, the switcher reverts to the factory-installed firmware.*

6. Click the *Open* button. A status window, which shows the progress of the upload, appears (figure 5-5). The firmware upload to the MVX 128 A switcher may take a few minutes.

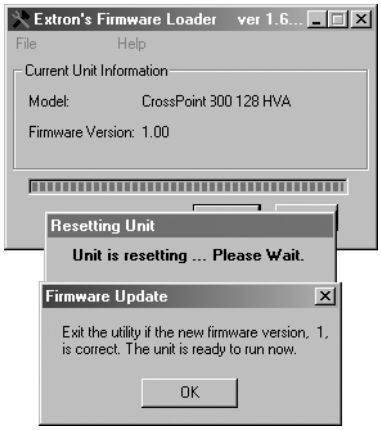

Extron's Firmware Loader ver 1.6...
File
Help
Current Unit Information
Model: CrossPoint 300 128 HVA
Firmware Version: 1.00
Resetting Unit
Unit is resetting ... Please Wait.
Firmware Update
Exit the utility if the new firmware version, 1, is correct. The unit is ready to run now.
OK

Figure 5-5 — Firmware Loader status indicator bar, switcher reset, and firmware update

NOTE *If the firmware loader utility exits before the status bar has progressed completely across the indicator window, try using a control cable with only pins 2, 3, and 5 connected. If necessary, modify the cable by removing pins or cutting wires.*

7. When prompted, confirm that the firmware version displayed in the firmware loader is correct. Click *Ok* in the Firmware Update prompt window.

8. Click the *Exit* button to exit the firmware loader utility.

NOTE *The firmware loader utility increases the serial port's baud rate to 115,200 to speed up the upload process. Occasionally, the firmware loader may be unable to return the serial port to its earlier baud rate, in which case communications with the switcher may not be possible. If you are no longer able to communicate with the switcher after the firmware upload completes, see* Selecting the RS-232/RS-422 protocol and baud *rate in chapter 3,* Operation, *on page 3-33.*

Windows buttons, drop boxes, and trashcan

The buttons, drop boxes, and trash can on the right side of the program window perform the following functions:

Power — Unavailable for MVX 128 A switchers, because the switcher power cannot be controlled via software.

Executive mode — Allows you to lock out front panel operations, except for the view-only mode functions.

Presets menu — Displays a list of up to 32 global presets. You can select a preset from the list to display it in the window and either activate it (**Go**) or delete it (**Delete**).

Go — Activates the selected preset as the current configuration.

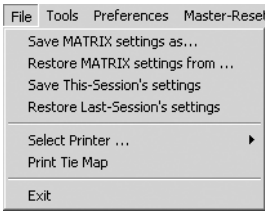
Save as — Allows the current set of ties to be saved as a preset. Enter the preset number when prompted to do so.

Changes – Take — Allows you to save to file any changes made to the displayed configuration.

Changes – Cancel — Returns to the previous screen, undoing any changes you have made.

Trash can — Drag and drop from an input or output button to the trash can to unmake all ties associated with that input or output.

Windows menus



File menu

Save matrix settings as — Saves a complete set of up to 32 presets, plus the last active setting (preset #0), to a file. Saved settings include audio gain settings (if specified), assigned icons, and icon captions.

Restore matrix settings from — Loads and activates a previously saved setting file.

Save this-session's settings — Saves the current assigned icons and icon captions.

Restore last-session's settings — Loads the icons and icon captions that were saved during the last session. If you saved the previous session's changes to disk the last time you exited the program, the ties from that session are also loaded.

Select printer — Selects the target printer.

Print tie map — Prints the tie set that is displayed on the screen.

Exit — Closes the Matrix Switcher Control Program.

Tools menu

Assign device icons — Displays the complete set of input and output device icons. You can drag any of these icons to the input and output boxes.

Edit device palette — Allows you to add your own device icon graphics.

Audio-Input gain settings — Displays the audio gain level setting for a single input or for all inputs and allows you to change it. The level is expressed as the magnitude (number of decibels) and polarity (positive, gain or negative, attenuation) of the audio adjustment.

Audio-Output volume settings — Displays the audio output level setting for a single input or for all inputs and allows you to change it. The level is expressed as a percentage of the input audio volume that is applied to the output; 0% is full attenuation (audio is silent), 100% is full volume.

Mute-Outputs settings — Displays the Mute Adjust screen, from which you can mute video and/or audio for each input.

Update firmware — Allows you to replace the firmware that is coded on the switcher's control board without taking the switcher out of service, opening the switcher enclosure, and replacing the firmware chip set. See *Updating firmware* on page 5-5.

Hardware status — Provides an overall view of the status of the matrix switcher, including the power supply voltages, the temperature status, the Remote RS-232/RS-422 port configuration, and the installed and updated firmware status (figure 5-6).

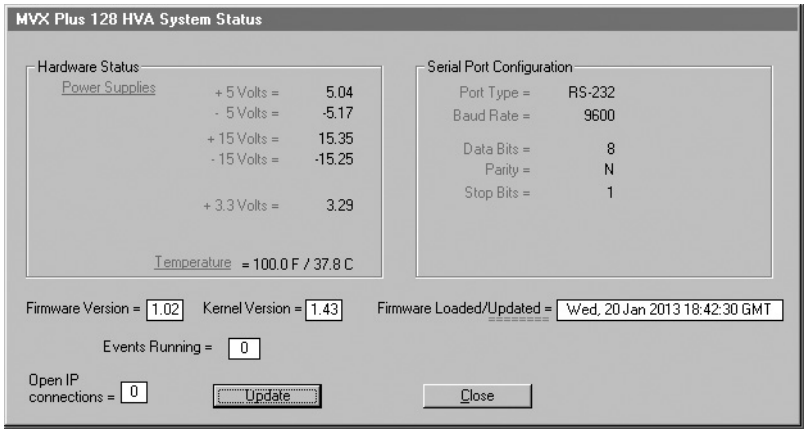

MVX Plus 128 HVA System Status
Hardware Status
Power Supplies
+ 5 Volts = 5.04
- 5 Volts = -5.17
+ 15 Volts = 15.35
- 15 Volts = -15.25
+ 3.3 Volts = 3.29
Temperature = 100.0 F / 37.8 C
Serial Port Configuration
Port Type = RS-232
Baud Rate = 9600
Data Bits = 8
Parity = N
Stop Bits = 1
Firmware Version = 1.02
Kernel Version = 1.43
Firmware Loaded/Updated = Wed, 20 Jan 2013 18:42:30 GMT
Events Running = 0
Open IP connections = 0
Update
Close

Figure 5-6 — Status window

Name presets — Allows you to assign a name to each of the 32 memory presets.

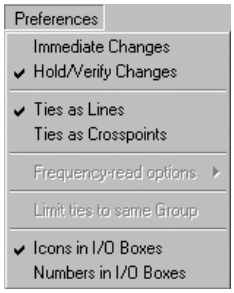
NOTE *Preset names are limited to 12 upper- and lower-case alphanumeric characters, space, and the _ : = and / characters.*

NOTE *The following characters are invalid in preset names:*
+ ~ , @ = ' [ ] { } < > ' " ; : | \ and ?.

Show RS-232 strings — Displays the ASCII commands that are used by the current configuration. You can refer to these for RS-232 programming.

Initialize — Initializes and clears any or all of the following: ties, presets, audio configuration, preset names, icon names, and icons.

Preferences menu



Immediate changes — Causes configuration changes to take effect immediately.

Hold/verify changes — Delays implementation of configuration changes until the Changes – Take button is pressed.

Ties as lines — Displays ties as lines (figure 5-7).

Figure 5-7 — Ties shown as lines

Ties as crosspoints — Displays ties as a matrix of inputs and outputs (figure 5-8). Ties that have been made are indicated as **amber** (video and audio), **green** (video only), and **red** (audio only) boxes. Ties that will take effect when you click on the *Take* button are indicated by +. Ties that will be broken when you click on the *Take* button are indicated by –.

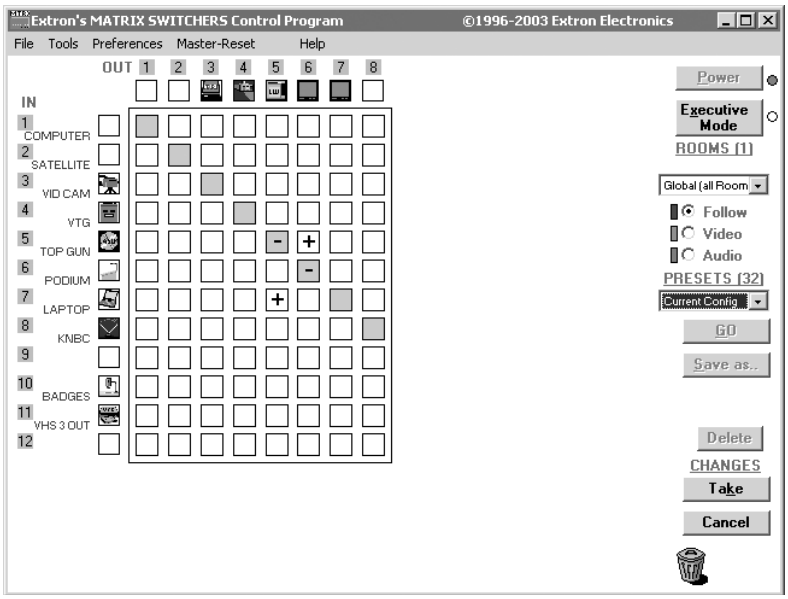


Figure 5-8 — Ties shown as crosspoints

Icons in I/O boxes — Erases any numbers in the I/O boxes in the Control Program window (figure 5-3). You can place icons in the boxes.

Numbers in I/O boxes — Erases any icons in the I/O boxes in the Control Program window and fills each box with the associated input or output number.

Master-Reset selection

Master reset clears all ties and presets, all video and audio mutes, resets all I/O grouping, sets all input audio levels to unity gain (+0 dB), and sets all output volume levels to 100% (0 dB of attenuation).

NOTE *Master reset does not reset the Internet protocol (IP) settings.*

Using emulation mode

Emulation mode allows you to set up the software without attaching the switcher to the computer. To use emulation mode, do the following:

1. Double-click the MATRIX Switchers+ Control Program icon in the Extron Electronics group or folder.
2. Choose Emulate, and click *OK*.
3. Choose an emulation file to open, and click on OK. The file DEMO.MTX provides a sample of a completed matrix setup. Selecting the file NEW.INI or clicking *Cancel* provides a blank setup to get you started.
4. Enter the file name under which you want to save any changes to the file, and click *OK*.
5. Select the number of video boards, audio boards, and matrix model for which you are preparing a configuration, and click *OK*.
6. Continue using the program as described on page 5-3.

Using the help system

For information about program features, you can access the help program in any of the following ways:

- From the Extron Electronics program folder or group, double-click on the MATRIX Switcher+ Help icon (shown at right).
- From within the Matrix Switcher Control Program, click on the Help menu on the main screen.
- From within the Matrix Switcher Control Program, press the F1 key.

Button-Label Generator Program

The Button Label Generator software creates labels that you can place in the translucent label strip windows above and below the input and output pushbuttons. You can create labels with names, alphanumeric characters, or even color bitmaps for easy and intuitive input and output selection. See appendix B, *Specifications, Part Numbers, and Accessories*, for blank labels and procedures for removing and replacing the translucent covers.

The program is contained on the same CD-ROM as the Matrix Switcher Control Program and is also available on the Extron Web site, www.extron.com.

Appendix A

Specifications, Part Numbers, Accessories

Specifications

Part Numbers and Accessories

Button Labels

Specifications, Part Numbers, Accessories

Specifications

Video

Routing	12 x 8 matrix
Gain	Unity
Bandwidth	>300 MHz (-3 dB) , fully loaded 0 - 10 MHz .....no more than +0.1 dB to -0.1 dB 0 - 130 MHz .....no more than +0.8 dB to -0.8 dB
Crosstalk	-80 dB @ 1 MHz, -55 dB @ 10 MHz, -45 dB @ 30 MHz, -37 dB @ 100 MHz
Switching speed	200 ns (max.)

Video input

Number/signal type	12 RGBHV, RGBS, RGsB, RsGsBs, HDTV component video, component video, S-video, composite video
Connectors	12 female 15-pin HD
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB 0.3 Vp-p for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum levels	Analog: 0.5 V to 2.0 Vp-p with no offset
Impedance	75 ohms
Return loss	<-30 dB @ 5 MHz
DC offset (max. allowable)	1.5 V

Video output

Number/signal type	8 RGBHV, RGBS, RGsB, HDTV component video, component video, S-video, composite video (follows input type)
Connectors	8 female 15-pin HD
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB 0.3 Vp-p for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum levels	0 V to 2.0 Vp-p (follows input)
Impedance	75 ohms
Return loss	-30 dB @ 5 MHz
DC offset	±5 mV with input at 0 offset
Switching type	Triple-Action™

Sync

Input type	RGBHV, RGBS, RGsB, RsGsBs
Output type	RGBHV, RGBS, RGsB, RsGsBs (follows input) Tri-level on Y, R-Y, B-Y channels (component video 720p, 1080i, 1080p) Bi-level on Y channel (for all other component video rates)
Input level	0.5 V to 5.0 Vp-p, 4.0 Vp-p normal
Output level	AGC to TTL: 4.0 V to 5.0 Vp-p, unterminated
Input impedance	510 ohms
Output impedance	75 ohms
Max input voltage	5.0 Vp-p
Max. propagation delay	30 ns
Max. rise/fall time	4 ns
Polarity	Positive or negative (follows input)

Audio

Routing	12 x 8 stereo matrix
Gain	Unbalanced output: -6 dB; balanced output 0 dB
Frequency response	20 Hz to 20 kHz, ±0.05 dB
THD + Noise	0.03% @ 1 kHz at nominal level
S/N	>90 dB, balanced, at maximum output (21 dBu), unweighted
Crosstalk	<-80 dB @ 1 kHz, fully loaded
Stereo channel separation	>80 dB @ 1 kHz
CMRR	>75 dB @ 20 Hz to 20 kHz

Audio input

Number/signal type	12 stereo, balanced/unbalanced
Connectors	(12) 3.5 mm captive screw connectors, 5 pole
Impedance	>10k ohm, balanced/unbalanced, DC coupled
Nominal level	0 dBV (316 mV) 0 dBu (775 mV)
Maximum level	+19.5 dBu, (balanced or unbalanced) at 0.01% THD+N
Input gain adjustment	-18 dB to +24 dB, adjustable per input by RS-232/422 or front panel

NOTE *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu*

Audio output

Number/signal type	8 stereo, balanced/unbalanced
Connectors	(8) 3.5 mm captive screw connectors, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1 dB channel to channel
Maximum level (Hi-Z)	>+21 dBu, balanced or unbalanced at 0.10%THD+N
Maximum level (600 ohm)	>+15 dBm, balanced or unbalanced at 0.10%THD+N
Output volume range	0 to 64 (-98 dB to 0 dB) in 1 dB increments from steps 1 to 64, 35 dB increment from step 0 to 1

Control/remote — switcher

Serial control port	1 RS-232 or RS-422, 9-pin female D connector
Baud rate and protocol	9600 (default), 19200, 38400, 115200 baud (adjustable); 8 data bits, 1 stop bit, no parity
Serial control pin configurations	RS-232: 2 = TX, 3 = RX, 5 = GND RS-422: 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = Tx+
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™)

General

Power	100 VAC to 240 VAC, 50/60 Hz, 30 watts, internal, autoswitchable
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +113 °F (0 to +45 °C) / 10% to 90%, noncondensing
Rack mount	Yes, with included brackets
Enclosure type	Metal
Enclosure dimensions	3.5" H x 19.0" W x 9.4" D (2U high, full rack wide) 8.9 cm H x 48.3 cm W x 23.9 cm D (Depth excludes connectors. Width includes rack ears.)
Product weight	14.4 lbs (6.5 kg)
Shipping weight	21 lbs (10 kg)
DIM weight, international	25 lbs (12 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

Part Numbers and Accessories

Included parts

These items are included in each order for a MVX 128 A matrix switcher:

Included parts	Replacement part number
MVX 128 A	60-799-01
Tweeker (small screwdriver)	
MVX 128 A user's manual	
Captive screw audio connectors (20)	10-319-10
Matrix Switchers Control Program and Button-Label Generator	

Accessories

These items can be ordered separately:

Adapters, power supplies, labels	Part number
MKP 1000 remote keypad	
Black	60-239-02
White	60-239-03
RAL9010 white	60-239-05
WT (water-tight)	60-239-51
MCP 1000M (master)	60-298-01
MCP 1000S (slave)	60-298-02
MKP 2000 matrix switcher X-Y remote control panel	
Black	60-682-02
White	60-682-03
RAL9010 white	60-682-05
MKP 3000	
Black	60-708-02
White	60-708-03
RAL9010 white	60-708-05

Cables

Male-to-female VGA molded connector cables	Part number
VGA 3′ MHR, 3′ (0.9 m)	26-112-17
VGA 6′ MHR, 6′ (1.8 m)	26-112-15
VGA 15′ MHR, 15′ (4.5 m)	26-112-01
VGA 25′ MHR, 25′ (7.6 m)	26-112-05
VGA 35′ MHR, 35′ (10.6 m)	26-112-28
VGA 50′ MHR, 50′ (15.2 m)	26-112-29
VGA 75′ MHR, 75′ (22.8 m)	26-112-30
VGA 100′ MHR, 100′ (30.4 m)	26-112-31

Male-to-female VGA backshell connector cables	Part number
VGA 3′ MHR, 3′ (0.9 m)	26-112-35
VGA 6′ MHR, 6′ (1.8 m)	26-112-36
VGA 15′ MHR, 15′ (4.5 m)	26-112-37
VGA 25′ MHR, 25′ (7.6 m)	26-112-38
VGA 35′ MHR, 35′ (10.6 m)	26-112-27
VGA 50′ MHR, 50′ (15.2 m)	26-112-02
VGA 75′ MHR, 75′ (22.8 m)	26-112-03
VGA 100′ MHR, 100′ (30.4 m)	26-112-04

Male-to-male VGA molded connector cables	Part number
VGA M3′ MHR, 3′ (0.9 m)	26-238-14
VGA M6′ MHR, 6′ (1.8 m)	26-238-01
VGA M10′ MHR, 10′ (3.0 m)	26-238-07
VGA M15′ MHR, 15′ (4.5 m)	26-238-02
VGA M25′ MHR, 25′ (7.6 m)	26-238-03
VGA M35′ MHR, 35′ (10.6 m)	26-238-17
VGA M50′ MHR, 50′ (15.2 m)	26-238-18
VGA M75′ MHR, 75′ (22.8 m)	26-238-19
VGA M100′ MHR, 100′ (30.4 m)	26-238-20

Male-to-male VGA molded connector cables	Part number
VGA M3′ MHR, 3′ (0.9 m)	26-238-24
VGA M6′ MHR, 6′ (1.8 m)	26-238-25
VGA M10′ MHR, 10′ (3.0 m)	26-238-26
VGA M15′ MHR, 15′ (4.5 m)	26-238-27
VGA M25′ MHR, 25′ (7.6 m)	26-238-28
VGA M35′ MHR, 35′ (10.6 m)	26-238-16
VGA M50′ MHR, 50′ (15.2 m)	26-238-04
VGA M75′ MHR, 75′ (22.8 m)	26-238-05
VGA M100′ MHR, 100′ (30.4 m)	26-238-06

Button Labels

Figure A-1 provides 12-button strips of blank button labels. Feel free to photocopy them or cut them out of the manual, write button information in each button area as desired, and put them in the switcher's label window. For 8-button strips, use scissors to trim the blank to the appropriate length.

To remove a panel, insert the Phillips-head end of a Tweeker or small Phillips-head screwdriver into the hole in one end of the panel, and gently slide the tab at the edge of the panel out of the recess in the switcher housing.

Figure A-1 — Button label blanks, 12-button strips

FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1001 East Ball Road
Anaheim, CA 92805, USA

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Asia:

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

Japan:

Extron Electronics, Japan
Kyodo Building
16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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